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CHINESE LABOR IN BRAZIL.

THE labor situation in Brazil is of general interest as having a possible bearing upon the future of the India-rubber market. It is well known to all who are familiar with the crude-rubber trade in South America that the supply of labor adapted to the Amazonian forests is fluctuating, unreliable in character, and generally inadequate to the demand. This uncertain factor in the production of rubber has long been one of the causes of inability to predict with confidence for any considerable length of time the price of the crude product. The rubber-producing section is sparsely settled and the successful exploitation of this industry has always depended more or less upon the importation of labor from other provinces. For a long time efforts have been made to induce laborers from Ceará to settle in Amazonas and Grão Pará to engage in rubber-gathering, but these people have failed to become acclimated and in most cases have speedily succumbed to fevers prevalent along the Amazon.

It is not alone in rubber-gathering that a lack of labor has been experienced in Brazil. An industry more important to that country is the growing of coffee, and it is claimed that since the emancipation proclamation of Dom Pedro the native laborers and slaves imported from Africa can no longer be depended upon. There are also the cocoa- and sugar-plantations, on which the lack of reliable labor is seriously felt. The importance of this problem is illustrated by the statement that last year in a single State in Brazil over 600,000 bags of coffee were lost simply because the crop could not be gathered. According to the same estimate the direct loss to the planters of the whole country through the waste of the coffee crop was $8,000,000 or more.

It has been the policy of the Republic, therefore, to encourage immigration from any source from which there was any hope that satisfactory laborers could be obtained. Under the liberal policy of the Government, including free transportation, some 300,000 laborers were secured from Germany and Italy last year, but these have not proved wholly satisfactory for plantation work. It is now proposed to open relations with China and Japan, with a view not only to organizing a direct trade with those countries, but particularly to encouraging the immigration of Chinese to Brazil to be employed in place of the former slave labor in rubber forests, as well as on the different plantations. Brazil has appointed a Minister to China, who is now on his way to Peking to negotiate a treaty with the Emperor and Li Hung Chang, under which contracts may be made for the employment of laborers for Brazilian plantations for definite terms of years.

The successful employment of Chinese laborers on sugar- and rice-plantations in various parts of the world, to say nothing of their success in the growth of rice and tea in their own country, suggests that there is no reason why they should not be equally successful in Brazil, the climate of which is likely to prove less disastrous to them than to European races. How well they will do in the rubber forests remains to be tested, of course, but as they have not

failed in any other industry in which they have been employed, it is safe to predict that they will prove as satisfactory at least as the negro slaves who preceded them.

The introduction of a more adequate force of laborers in Brazil, accompanied by better organized systems of rubber-gathering, together with the more direct facilities for trade with the United States in prospect, it may be taken for granted, will render impossible in future any very marked advance in the price of crude gum in our markets. The speculative feature of the rubber market due to uncertainty of supplies is likely to grow less with each year. A point of much interest in connection with the trade in the United States is that a majority of the large consumers of India-rubber are,—by reason of the recent combinations of which the United States Rubber Co. is the most important example,—practically their own importers. We have, therefore, the unique spectacle of importers interested in keeping down the selling-price here of the imported commodity. While the introduction of Chinese labor in Brazil is a feature entirely foreign to the other elements in the market here noted, its influence will be to accentuate the new conditions in the market growing out of recent movements in the United States.

A RUBBER SUBSTITUTE AT $1 A POUND.

FROM the *Manufacturer's Record* comes an exceedingly unique article regarding industry in Savannah, Ga., that must fill with amazement the average manufacturer of rubber goods. It is an article penned by C. B. Warrand, who evidently is not fully up in rubber manufacture, but who at the same time is perfectly honest in his statements. He describes a secret process where cotton-seed-oil is manufactured into rubber, and says it is not a substitute but a bona fide rubber; or such at least some of the best experts have pronounced it to be. No one knows what is going on in the factory where this is produced with the exception of a few ignorant negroes, nor is any outsider ever admitted. Those who have got at the outside facts know that crude cotton-seed-oil costing about 50 cents a gallon, or about $135 a ton, is carted into the mill, and comes out in the shape of tons of pure rubber worth $1 a pound, or $2000 a ton, and the writer further states that this is shipped to a very prominent rubber dealer and manufacturer in Boston. Strangely enough the discoverer of this process is an artist, who discovered, in making a varnish for oil paintings that he could make pure rubber. His claim is that the process is so simple that he cannot patent it, and hence his only safeguard is the secrecy of the process. The only information that he vouchsafes is that he uses only 15 per cent. of genuine rubber, to produce an article that cannot be told from India-rubber. The story of how he went to Boston and interested a prominent rubber-manufacturer, getting him to place $30,000 at his command; how he bought up a site of some fifty acres; the high fence that enclosed his factory when built, and the care with which he rigidly guards his secret all reads like a novel.

Looking at these statements from the experience acquired through years of compounding rubber, and experimenting with various cotton-seed and rape-seed substitutes, one can only say that this inventor is grossly mistaken as to the value of his discovery. It has long been known that a product could be formed from oxidized oils by various processes which chemically is exactly the same as India-rubber. Practically, however, it is as different as chalk is from cheese. There are various excellent substitutes on the market that are largely used, the manufacturers of which are glad to get from 10 to 20 cents a pound. The actual value of any of these in a rubber compound varies from 5 to 11 cents. It is one of the most natural things in the world that a man unacquainted with the rubber business should be mistaken when he produces an oil substitute. It has so many qualities that are apparently excellent, that he is sure he has produced the genuine article. There is, however, not one chance in a million that even half of what Mr. Warrand states can be realized.

THE RUBBER COMPANIES IN THE "TRUST."

THERE has been so much gossip recently in regard to the status of the rubber-shoe manufacturing companies both inside and outside of the big combination that even members of the trade have become confused on the subject. Negotiations were no sooner begun for the absorption of the Woonsocket Rubber Co. than the report gained currency that the consolidation was already an accomplished fact. This was met by such prompt denials, however, that some newspapers printed on the same date both the reports of the consolidation and President Banigan's statement that nothing of the kind had occurred. These negotiations having been settled, as recorded in detail in another part of this paper, it may be well to present a revised list of the concerns now working under the combination. They are ten in number, operating fourteen mills:

The American Rubber Co., Boston, Mass.
The Boston Rubber Co. (two factories), Boston, Mass.
L. Candee & Co., New Haven, Conn.
Goodyear's Metallic Rubber Shoe Co.—"Wales-Goodyear"—(two factories), Naugatuck, Conn.
Lycoming Rubber Co., Williamsport, Pa.
Meyer Rubber Co., New Brunswick, Conn.
National India Rubber Co., Bristol, R. I.
New Brunswick Rubber Co., New Brunswick, N. J.
New Jersey Rubber Shoe Co., New Brunswick, N. J.
Woonsocket Rubber Co. (three factories), Woonsocket, R. I.

The concerns not actually in the United States Rubber Co. are six in number, operating eight mills, as follows:

The Boston Rubber Shoe Co. (two factories), Boston, Mass.
The Colchester Rubber Co., Colchester, Conn.
The Goodyear Rubber Co. (two factories), Middletown, Conn., including the Lambertville Rubber Co., Lambertville, N. J.
Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Conn.
The Manhattan Rubber Co., Setauket, L. I.

Those who are acquainted with the extent of the output of the largest of these companies, their well-established business, and the recognized excellence of their wares, do not need to be told how important an element of rubber-shoe manufacture still remains outside the combination.

CRUDE RUBBER FROM MANY LANDS.

By I. A. Sherman.

IT may be said that every grade of India-rubber produced in the world is used at some time or other by American manufacturers. The employment of the lowest sorts, however, is exceptional, being met only as a rule when the prices of Pará rubber become unreasonably high. Then the manufacturer looks around him for a mixture. The science of mixing various grades of rubber, by the way, has been better systematized in Europe than in America, on account of the longer existence there of the necessity for it. Great skill and experience are required to distinguish the various grades of rubber, and it is safe to say that few manufacturers possess this knowledge in all its details.

Beginning with the Pará sorts, the finer are distinguishable (1) by a peculiar odor much like that of smoked bacon, which is acquired by the rubber in the process of curing; (2) the layers in fine Pará are regular in their formation, and (3) the color, when the biscuit is cut, varies from a milk white to a tawny red. The fine and medium grades embrace several qualities, including the upriver islands, the upriver Madeira, and the upriver Bolivian, for which Manáos is the great collecting point as the distance from Pará increases. The Madeira and Bolivian sorts have no specially distinguishable features except that the threads, so to speak, which can be lifted from the mass, are harder and tougher than in the other sorts. The fine grades come in small and thin, or, rather, flat biscuits.

The coarse grades of Pará are made up of the drippings in the process of curing, and contain more or less of foreign substances. The "Cameta" coarse is in the shape of little cups crushed together, while "Islands" coarse is in the form of small balls.

Further down the Brazilian coast is grown a rubber sometimes called Mangabeira, which reaches us by way of Bahia. This comes in large round pieces of a milkish white color for one grade, while another has the appearance of huge slices of liver of a tawny red color. The slices are sometimes thick and sometimes thin, the latter having less moisture, and bringing a higher price per pound, though not always preferred by manufacturers. The Mangabeira rubber is alum-cured.

Ceará scrap comes in bunches like small crabs. The shrinkage of this rubber is very large, for which reason it is not a favorite; aside from its shrinking in volume in use, it is a good rubber.

Colombian rubber comes in the form of pressed strip about eight inches long and two inches wide. The color is black, with sometimes a white center.

Nicaragua strip and sausage, in form as these names indicate, are a dark tough rubber and largely used in the trade. Mexican rubber is black and comes in sheets and scrap.

Cauchos come in balls and in scrap, looking very much as if they had been burned in curing, but this is only apparent. The Panamas are very similar to the Cauchos.

Matto Grosso is a virgin rubber, dark in color in the center, and comes in the shape of biscuit. Its use, which is inconsiderable, is in hard-rubber goods.

Of the East Indian sorts there is the Assam, which comes in the shape of balls matted together. It is reddish in color and rather soft in its nature. In the cheaper qualities there is a great deal of sand. It is a good friction rubber.

Borneo rubber is in shape like pieces of liver and is of a whitish color. The cheaper qualities are full of soft dirt, and sometimes grass.

The "guttas" come from Borneo. They are whitish in color, looking sometimes like the limb of a tree, again flat like, or in blocks. Balata belongs to the gutta family, coming in flat layers. It comes from Venezuela and Dutch Guiana.

The Flubia from Borneo, looking like a piece of milk stone, white, is used in the trade as a substitute.

Pinky Madagascar comes from Tamative and looks like liver—red outside and pinky inside—and is very desirable for the hard-rubber trade. Another form is the Majunga, which is a fine rubber coming in large balls. The Black Madagascar comes in balls from three to ten inches thick, generally white inside, but sometimes it runs dark. It is of medium quality. Madagascar Niggers come in balls and have sand inside, but this is not a weighty objection, as the sand absorbs the acid in the milk, leaving a very good rubber when it is sheeted up. Pancake Madagascar comes in cakes, and has not much sand in it.

Mozambique Ball is of an orange color. No. 1 has practically no sand in it while No. 2 and No. 3 have more sand, but after they are treated they are as good as the highest grade. They are not unlike small marbles in form, No. 1 being also in balls large in size and regular in shape. This is wound on a stick like kite-cord. The stick is removed, and then it is a very desirable rubber. Mozambique sausage comes in large and medium-sized balls; it is quite clean. Mozambique Unripe is the cheapest of all these rubbers, having bark as well as sand in it. It is reddish in color, that of the West coast being blackish.

Thimbles from the East coast of Africa have bark in them, and are reddish in color.

On the West coast are Nigger heads, coming in round white balls, weighing quite a pound, subdivided as to quality in the order named; Gambier Balls, first grade, Addah Niggers, cheaper and Sierra Leone Niggers the lowest. These are all tough rubbers and are used as coarse. They all come from the Sierra Leone district. Lower down on the coast are the Loanda Niggers and the Benguela, which come from the Loanda district. These rubbers come in balls, the Benguela having a little more bark in it than the Loanda. Old Calabar looks like the Cauchos and comes in cakes; and has quite a demand.

Liberian has the same general characteristics only it is a softer rubber. African Ball is from two to eight inches

in diameter ; some of it is soft, some hard. Some balls are white inside and some are red.

Almedina is very little known in this country. It comes from the Loanda section ; and little of it filters past Portugal, where all possessions of that country send their rubber. Benin comes in hard round balls, white inside and black on the outside.

Buttons come from the West coast and are smaller than Accra oysters, which are shaped like those delectable bivalves and are of good quality. A second quality sometimes has dirt in it.

Pressed salt-pond comes in cakes rather round, black in color on the outside. Soft salt-pond, from the Cape coast, comes in large white pieces.

In Cameroon balls, "K. B." is the best quality and comes in prime round balls. "B. G." is simply a smaller ball. Small Cameroons and Botanges are in quality equal for use to the first two mentioned. Cameroons are black outside and white inside. They also come in tongues one to three inches long. These make up a very good rubber, the smaller and mixed being called second grade.

Kongo ball is firm and hard, white or drab on the inside and black on the outside. Like the Cameroons this is much sought for. Gaboon lump and flakes are also popular, being free from dirt and soft.

Knuckles come in larger balls than the Kongos but are of the same general description.

Rio Negro comes in small cakes and resembles the Sierra Leone Niggers. It is not so hard as the Sierra Leone in working up. The second quality has sand in it.

African Small Balls, as their name indicates, are generally massed together. When "mixed" it has a little flake in it and would be called second quality.

The list, it will be seen, is quite an extensive one, and it is worthy of note that the supply of no one of these items has ever been exhausted. The supply has been short at times on account of the lack of labor for gathering certain grades, but the practical necessity of cultivation has never yet been made the complaint. As the rubbers approach the Pará grade in quality—and a great many more would do so if cured properly—another argument as to the growing scarcity of good rubber passes away. The most important question now bearing upon the African rubbers relates to the lack of transportation facilities. The carrying of African rubbers by negroes for hundreds of miles, to be sent in some cases first to Portugal, thence to England, and finally to the United States, making a profit for every one in the chain of dealers, is a most serious drawback to the procuring of cheap rubber in this country to-day.

THE COLORING OF INDIA-RUBBER.

By H. C. van Rhyn, Ph. D.

THE coloring of India-rubber goods has been hitherto the weakest point in the process of manufacturing. Nothing can rival the brilliancy of aniline colors, these most remarkable products of modern chemistry which has found the means of extracting all the colors of the rainbow from black coal-tar. From an esthetical point of view it may be asked whether the human eye has not lost its subtlety by the continued contemplation of the bright, loud aniline colors and many an artist would greet with enthusiasm the return towards the softer melting shades that were produced in the past by the use of dyewoods and dyewood extracts. However, the manufacturer must strive to please the public taste,—it would be a difficult matter for him to try to correct it,—and he will naturally find his profits growing whenever goods coming from his hands find the greatest number of admirers.

For many years colored India-rubber goods were to be found in the markets of the world, but all of them were wanting in the bright hues which were displayed on textile fabrics and other merchandise. The colors shown by India-rubber were indistinct, impure, and had not even the advantage of artistic beauty as shown on the handiwork of dyers of many years ago. This circumstance of course did not escape the eye of the manufacturer, and he tried all the inventive genius at his command to correct this failing.

Many trials were made to adapt anilines to the requirements of the India-rubber industry but no satisfactory results were obtained, and the idea had to be given up.

A few years ago the "Badische Anilin und Soda Fabrik" at Ludwigshafen on the Rhine, under the superintendence of the eminent chemist Professor Dr. Caro put into the market a comparatively complete set of aniline colors "soluble in benzine" which were believed to be superior to the ordinary anilines (soluble in water or alcohol) for certain branches of manufacture. The India-rubber manufacturers of Mannheim on the Rhine began to experiment with the new colors, and although they had some misgivings in the beginning, the solvent benzine being also a solvent for rubber, remarkably good results were obtained.

The writer does not mean to say that India-rubber colored by anilines soluble in benzine takes the color shades as well as textile fabrics, but it is certain that the new process produces goods which are vastly superior to everything brought out in this line before, in brightness as well as in variety. The weakest point of the new method is the making of green India-rubber and the writer has not yet seen a pure sea green, although the olive shades are acceptable.

It is not intended to give a detailed account of the coloring process in this article ; the details in fact vary in every factory, but what follows may prove useful to American India-rubber manufacturers in so far as it may show them the way to obtain the same results as German manufacturers with the aid of a man, preferably a skilled chemist, who is accustomed to the use of aniline colors. The processes of coloring India-rubber may be divided into three parts : First, through-coloring, or coloring of the

mass while in a molten condition ; second, surface coloring, and third, printing.

I.—THROUGH COLORING.*

In coloring molten India-rubber one rule should always be observed, namely : Never have the temperature higher than is necessary to keep the mass in a fluid state. A fixed temperature cannot be given because the melting-point of rubber varies with its quality. Have no uncovered fire near the vessel in which the coloring is done, as the fumes of benzine are very inflammable. Dissolve the aniline in benzine at ordinary temperature, using about one gallon of benzine for every ounce of aniline. The quantity of aniline to be used in coloring a certain amount of India-rubber cannot very well be given, as it varies according to the shade or intensity of the color desired.

Ascertain if the molten rubber is perfectly neutral,—that is, if it shows neither acid nor basic reaction. A simple method for this is given below. Add the mordant in solution to the rubber and stir as well as possible. We give the names of some mordants below, but chemists disagree as to which are the best suited for this work. After the mordant is well mixed in, begin to add the color very slowly, and keep stirring constantly. A mechanical stirrer has of course to be provided, but the details of its construction can be left to the engineer.

When the desired shade is obtained stop adding color. It should be borne in mind, however, that the color of the rubber will show up a shade lighter and generally more bright after the mass has returned to a solid state. Only experience can teach the manipulator the secret of working with absolute correctness. Evenness in the density of the molten India-rubber is of the greatest importance. If some parts should be less fluid than others they are very liable to show a darker shade of coloring afterwards.

II.—SURFACE COLORING.

The coloring of the surface of India-rubber goods is of course a much simpler matter. In some manufactories the aniline dissolved in benzine is simply applied with the brush, but, where not the very cheapest kind of articles are concerned it is more advisable to first either dip the goods in the dissolved mordant or to brush them over with it, this makes the color much more lasting. Surface coloring does not leave the goods with a polished varnish-like appearance, and where this is desired it is advisable to finish them with some kind of transparent varnish. India-rubber dissolved in naphthol gives good results.

III —PRINTING.

The mechanical appliances for the printing of colors on India-rubber fabrics cannot very well be described in this article.

The colors for printing are prepared in different ways, but perhaps the most advisable ones are obtained by mixing the anilines dissolved in a small quantity of benzine with dextrine. It is better to use the yellow or canary dextrine and to avoid the pure white article. The yellow color will affect the aniline very little. About half of 1 per cent. of alum in a concentrated solution is mixed with the mass, and the fluid which remains at the top after mixing is drawn off. In order to make the color dry faster on the fabric a little sulphate of manganese may be mixed with the dissolved alum. The India-rubber fabric should be sponged with a solution of alum before it runs between the cylinders. One pound of alum to twenty-five gallons of water will suffice.

It is not intended in this article to touch on any of the older methods for coloring India-rubber. We believe that most manufacturers using the older colors get as good effects as can be had with them, but we believe that in all but the few cases in which *absolutely* fast colors are necessary, experimenting with anilines will lead to their adoption. We again call the attention of manufacturers to the necessity of having their rubber *neutral*, and would advise them to use the following simple test :

Dissolve a small quantity of the India-rubber in naphthol and apply the well-known tests on acids or bases with blue and red litmus paper. This test suffices in all cases.

We may close with a few remarks about anilines. Those who have had experience with the aniline colors of many years ago may think that they are not fast enough for their use. It should not be forgotten that enormous improvements have since been made in their manufacture, and the anilines of the present day, even after goods colored with them have been used in the open air for a long time, will show only a slight fading. Even then they will be brighter than any of the old colors.

In India-rubber works all so-called acid colors—that is, colors which have to be worked up with acids—must be avoided. There are enough anilines which do not require acids in their use to make a sufficient range of shades.

The manufacturers of anilines and their American representatives issue directions for the use of their colors, giving also the mordants to be used with them. The writer prefers alum whenever its use is possible, and bisulphate of soda will fill the bill in all other cases. No bad effects of the use of the latter were ever noticed.

For magenta red, the diamond fuchsine large crystals should be used, and by the addition of a little alkali blue a very good purple is obtained. The range from purple to light pink is very large and passes through the different shades of eosine (bluish and yellowish) and erythrosine.

The best greens are acid greens and for that reason unavailable for our purpose. Yet a brighter light green can be obtained by some aniline greens than would be had by the old process, and the olive shades are very satisfactory indeed.

Orange and yellow show very fine results and especially with the golden yellow, a really splendid gold color is obtained. Black, except for printing, is better made in one of the old ways, as aniline black (nigrosine), is more dark brown than black. For printing, however, nigrosine will answer. Browns are plentiful, Van Dyke brown being especially fine. Blue offers the whole range of marine and alkali blues, all of which may be used in India-rubber works.

* The coloring of "molten" India-rubber is certainly a problem that American manufacturers are unfamiliar with. Adding Naphtha to a mass heated to 300° to 400° F. would be generally considered dangerous, and further, to what use the sticky tar-like melted product could be put is a question.—THE EDITOR.

INDIA-RUBBER CASES IN THE COURTS.

THE Supreme Court of the United States in an opinion delivered by Mr. Justice Brown, on May 10, 1893, has affirmed a decree of the Circuit Court of the United States for the District of Massachusetts, in the case of Brigham *v.* Coffin *et al.* This was a bill in equity for the infringement of Letters Patent No. 283,057 issued August 14, 1883, to Frank E. Aldrich for an improvement in rubber cloths or fabrics.

The letters patent related to a rubber fabric having its surface printed with useful or ornamental figures in an ink of a different color from the fabric. A second claim in the patent described the ink or printing compound as being "composed in part of rubber, caoutchouc, Gutta-percha or some other analogous substance, and a coloring material or materials substantially as specified." While giving the composition of the ink, the patentee declared that he did not claim the same in and of itself considered, because he proposed to make such ink or printing compound the subject of another patent.

The answer denied that Aldrich was the inventor of any material or substantial part of the thing patented, and gave notice of prior patents; denied that the Aldrich patent described anything of value or importance, and denied that the invention was any advance upon the art of making rubber fabrics, or that such fabrics had ever been practically manufactured as described in the patent. The answer also denied infringement.

On a hearing upon pleadings and proofs in the court below the bill was dismissed upon the ground that there was nothing novel in an article of manufacture which consisted in printing ornamental figures upon a rubber fabric in colored ink composed in part of rubber. The plaintiff appealed.

The higher court similarly held the Aldrich patent void for want of novelty, and held further that as Aldrich disavowed any claim for the ink or printing compound, the case reduced itself to the single question whether there is any novelty in printing or stamping rubber cloth with designs of a different color or shade. Among the prior patents put in evidence was that of December 14, 1875, to Dunbar & Lothrop for an improvement in the manufacture of floor-cloths. The invention consists of a base of cheap compound of rubber overlaid or inlaid with figures or characters of a more expensive material, capable of receiving any desired color, these figures being in the vulcanizing process imbedded in the foundation so that an uniformly even surface exists over the whole.

In the patent of March 30, 1880, to Brigham and others, the object of the invention was stated to be to produce a light waterproof fabric for dress goods, ornamented with figures and colors to represent dress goods not of the waterproof class. The court held that it was difficult to see wherein the invention was different in any patentable feature from these prior devices. Incidentally it was mentioned in the decision that the invention of Brigham was a practical failure, and abandoned. Also that Aldrich, after putting his goods upon the market for a year and a half, abandoned the business and has not resumed it. "There does not seem to be much to choose between them in this particular," concludes the learned Justice.

* * *

IN the Supreme Court of Suffolk County, Mass., on June 1, Mr. Justice Holmes gave a decision sustaining the demurrers of the defendants in The Pará Rubber Shoe Co. *v.* Eliza E. Houghton and Same *v.* U. S. Houghton *et al.* These are bills in equity wherein the complainant is seeking to hold defendants liable as the surviving members and the administratrix as the representative of a deceased member of the firm of Houghton, Coolidge & Co., who were the selling-agents for the complainant, for commissions amounting to about $1,000,000, which were paid them during the course of eight years, upon the ground that there existed between them and complainant a fiduciary relation, and they made false reports exaggerating this amount of sales; that the deceased member who was also the president of the complainant, made false reports of the conditions of the company's liabilities and assets and over-estimated the value of the property of complainant, not reckoning the depreciation in the value of the machinery caused by wear and tear; and the bill also claims damage by reason of alleged excessive charges upon loans advanced the corporation.

The complainant says that these alleged false reports and doings induced it to continue to carry on its business in the belief that its business "was more prosperous than it really was" and that as soon as it ascertained the "true" state of the company it ceased to do business. It is claimed by plaintiff that the defendants must turn over all the commissions that they received and the administratrix be held liable for the depreciation which her intestate "falsely omitted in his report of the company's condition."

The defendants filed demurrers to both bills on the ground that no case has been set out for relief in equity or at law; that the bills are vague and uncertain. It was urged that the bills merely stated conclusions, and did not set out or allege the false representation or statement made by the defendants; that the plaintiff relied on those statements; or that its reliance upon them resulted to its damage.

The decision of the court is that the plaintiff's remedy, if any, is by a suit at law.

* * *

IN the Supreme Court at Boston on June 2, a decision was rendered in a personal-injury case, viz.: J. J. Murphy *v.* The American Rubber Co. The plaintiff claimed damages for an injury received while at work in the defendant's factory by slipping over a shafting on the floor. The decision of the court is that the danger was in plain sight and that there can be no recovery.

THE AFFAIRS OF THE UNITED STATES RUBBER COMPANY.

THE directors of the United States Rubber Co. who were chosen at the annual meeting of the stockholders at New Brunswick, N. J., on April 18, met on May 12 in the Farmers' Loan and Trust building in New York city, for the election of officers of the company. Preceding such election some changes were made in the composition of the board of directors, to make room for the Messrs. Banigan and Mr. Ballou, of the Woonsocket Rubber Co. The board is now constituted as follows:

Walter S. Ballou,	George H. Hood,
John J. Banigan,	Henry L. Hotchkiss,
Joseph Banigan,	Charles L. Johnson,
Charles A. Coffin,	James B. Langdon,
Samuel P. Colt,	Edwin A. Lewis,
Robert D. Evans,	George A. Lewis,
Charles R. Flint,	Mahlon C. Martin,
James B. Ford,	Frederick M. Shepard,
J. Howard Ford,	Richard C. Sibley,
Robert M. Gallaway,	J. Edward Simmons,
William H. Hill,	William L. Trenholm,
H. B. Hollins,	John P. Townsend,

Samuel N. Williams.

Joseph Banigan was elected to the presidency of the company. The list of officers was increased so as to provide for two vice-presidents, and Robert D. Evans was made first vice-president and James B. Ford second vice-president. Charles R. Flint was re-elected treasurer. M. C. Martin was elected assistant treasurer and Charles L. Johnson secretary.

* * *

ON May 24 the governing committee of the New York Stock Exchange listed the United States Rubber Co.'s additional issue of common stock amounting to $5,851,400, and of preferred stock, $5,851,400, making the total amount of common stock listed $19,842,600, and of the preferred $19,251,500. The total capitalization thus far, as represented by these figures, is $39,094,100.

In explaining the reason for the new stock issues Treasurer Charles R. Flint said, according to the New York *Journal of Finance*:

"These shares have been issued in payment for the properties of the Woonsocket Rubber Co., the Marvel Rubber Co., and the Lawrence Felting Co., This company has acquired all the shares of stock of the Woonsocket and Marvel Rubber companies, and have acquired by deed the property of the Lawrence Felting Co.

"The Woonsocket Rubber Co. is the owner of three large factories: (1) the Millville factory, located at Millville, Mass. This factory is constructed solely for the manufacture of rubber boots. It has a capacity of 9000 pairs per day; (2) the Alice mill, located at Woonsocket, R. I., built in 1891, solely for the manufacture of rubber shoes. It has a capacity of 30,000 pairs per day; and (3) the Woonsocket mill, located in Main street, in the city of Woonsocket. The Woonsocket company also own a fully-equipped devulcanizing plant with an annual capacity of upward of 1000 tons; nineteen double tenement houses for the use of workmen at the Millville factory; a large amount of land bordering on the Blackstone river, with valuable water rights, etc. In addition to the above properties the Woonsocket company has cash and quick assets over and above any liabilities amounting to $2,163,884.17.

"The Marvel Rubber Co., is a corporation engaged in the manufacture of rubber boots and shoes under patents owned by the company. This company is situated at Woonsocket, R. I.

"The Lawrence Felting Co., is located near the Millville factory, and is engaged in the manufacture of felt used in the lining of rubber boots and shoes. This company owns valuable adjoining lands, water power and water rights upon the Blackstone river. The property is complete and well equipped."

The usual summary of transactions in Rubber on the New York Stock Exchange appears on another page.

* * *

A POINT which has been discussed with no little interest in certain quarters is the value of the payment made for the Woonsocket Rubber Co. and the affiliated companies. On this point the *United States Investor* (Boston) makes the following calculations:

"As the paid-up capital of the Woonsocket company is $1,700,000, the stockholders have received securities of the United States Rubber Co. of the par value of $10,200,000. This stamps the bargain as a very good one for the Woonsocket stockholders, but it is no better than those who knew these people intimately had a right to expect they would get.

"Let us see what their United States Rubber Co. securities are worth to them at the present quotations: Quote the preferred at 80 and the 51,000 shares of preferred which the Woonsocket stockholders receive, are worth $4,080,000 At 40 the 51,000 shares of common are worth $2,040,000. Add these two amounts together and you get $6,120,000.

The stock of the Woonsocket Rubber Co. has always been held by a very few persons, and it has not been easy to obtain quotations on it nor to learn what dividends the company was paying. One must, therefore, work very much in the dark in attempting to make a comparison between the market price of United States Rubber Co. stock, and the price the Woonsocket stock might have been expected to command had it been quoted in open market. It is easy to see, however, that a most exorbitant quotation might be allowed for the latter without bringing the market price of the $1,700,000 capital stock anywhere near the present market price of the $10,200,000 United States Rubber stock, which the Woonsocket people have just obtained by putting their company into the trust.

"In fact, the capital stock of the Woonsocket company would have to sell at more than $350 a share, on the basis of $100 par, in order to equal the $6,120,000 which represents the market price of the United States stock given in exchange."

A NEW USE OF RUBBER IN THE NAVY.

NAVAL vessels use rubber with excellent results in connection with an anchor rope, in an invention devised by Lieutenant-Commander Sigsbee. At first it was devised for dredging purposes, but afterward changed in some respects to meet requirements in the anchoring rope employed for measuring the depth and swiftness of currents. In the ordinary way, it was found that there is a great strain caused by the sudden jerking in a pitching vessel, both on the latter and the rope itself.

This strain is overcome by what is called a rubber accumulator, and consists of seventy rubber disks or buffers on a middle rod so arranged that by compression they act as a spring. The buffers are cylindrical in shape, 2¼ inches in thickness, and separated one from another by metal disks one-eighth of an inch thick and in diameter over two inches larger than the rubbers. The latter in expansion will not overlap the metal surfaces. It is found that in this device a compression can be had of five feet, and this is sufficient to distribute the strain along the entire length of the ship. The application is made by the rope running from a reel located aft to the middle of the foremast and then passing through the rubber accumulator to the end of the anchoring boom, which is a spar thirty feet long, whence the rope with a 200-pound weight attached, is dropped vertically into the sea.

THE TRADE IN FOREIGN RUBBER TOYS.

THE buyers of foreign toys, which line includes rubber goods, are now abroad in search of novelties, having left New York in February, and may be expected to return this month. They roam around France, Germany, Bohemia, and Italy, but the most of their purchases are made in the two former countries. These factories hardly ever cease turning out their product. The Americans are, however, fast catching up with the trade in toys, and as the Yankee product is more realistic to the native-born child, the foreigner generally putting in some fantastic form or idea, the race is fast being won at home. Samples of foreign goods will reach here about the Fourth of July, and the season will be in full swing in October. As rubber is an article that deteriorates, and as styles and fancies change, the wholesale houses make it a rule not to have a toy left after the middle of December.

RUBBER CIGAR-HOLDERS OR MOUTHPIECES.

THE manufacture of rubber goods of special lines that are unique and that few know much about; for example, such as the manufacture of cigar-holders and mouthpieces for pipes. The general way in which this done is to take a rubber that is well adapted for hard-rubber work. Some claim that Pará is best for this; Madagascar rubber, however, gives a finer polish and is more generally used for nice work. In making up, the first thing is to make a tubing of the size desired, which is cut into pieces from 1 inch to 1⅛ inches in length. These tubes are made up by girls, who pick up two pieces, join them together by a small piece of tubing, strengthen this with a strip of thinly-sheeted rubber wound around wherever the mouthpiece is to be thick. These pieces, by the way, are all laid with a needle-like instrument and the work is exceedingly delicate. The result is a queer piece of rubber, looking something like an Indian club with a handle at each end. One end of the tube is then closed up tight, the interior is partially filled with water, and the other end is closed. The piece is then laid in a mold, which is fastened together and put in a vulcanizer, where it is left anywhere from ten to twenty-four hours to vulcanize. A longer heat gives excessive hardness, which, however, is not desired, as a medium hardness gives the best result. During the vulcanization the water in the tube expands into steam, and, forcing it against the sides of the mold, creates such a pressure that it gives an exact counterpart of the mold. Thus, when the cure is finished, the mouthpiece already threaded is the result. There is a slight bead on the edge of this mouthpiece, caused by the overflow of rubber from the mold, which is removable by an emery wheel. A soft leather wheel is used for polishing, and the ends of the mouthpiece are bored out, which completes the operation.

A WORLD'S FAIR INVITATION.

THE Boston Belting Co. are sending a card to their friends, which is such a neat reminder that they have an exhibit at the "World's Fair" that we reproduce it below. The card itself is printed in colors, so that in the reproduction one does not get the full artistic effect that the original has. The eagle perched

OUR EXHIBIT AT THE WORLD'S COLUMBIAN EXPOSITION WILL BE FOUND

IN MACHINERY HALL, SECTION 18, COLUMN J, NUMBER 27.

on the rolls of belting and the flags surrounded by the circle form the trade-mark of the company, which has been highly complimented as one of the most artistic yet produced.

DO YOU WEAR PLUMPERS?

A WELL-KNOWN New York writer of society topics writing on the means that ladies use to possess clear skin and rounded cheeks, says: "Anything more ghastly than plumpers,—which are simply rubber balls attached to the back teeth, which are always perfectly in evidence, and which the most skillful management fails to keep from moving about,—I have yet to see. Uncleanly and disfiguring, they are calculated to make the woman who putteth her trust in them a ridiculous and pitiable object. I can think of several well-known matrons here, whose cheeks owe their unstable roundness to this cause. One has given them up. She was receiving in her beautiful home on Fifth avenue a few weeks ago, a visitor who had with her an *enfant terrible*, a sweet child in those leathern leggins and smart reefer that belongs to the small New York boy under five. As the pretty, if slightly thin and *passé* hostess bent an engaging smile on the little one, he turned to his mother and inquired: 'Mamma, does she have marbles in her mouf?' There were other callers present, and of course they all began talking about the new play at Daly's, but somebody told. Somebody always does. As a consequence madame's smiling cheeks of late, if less rotund, have acquired a pleasingly restful look, which is a decided improvement."

DOES NOT EXPECT A DUTY ON RUBBER.

[FROM THE SHOE AND LEATHER GAZETTE.]

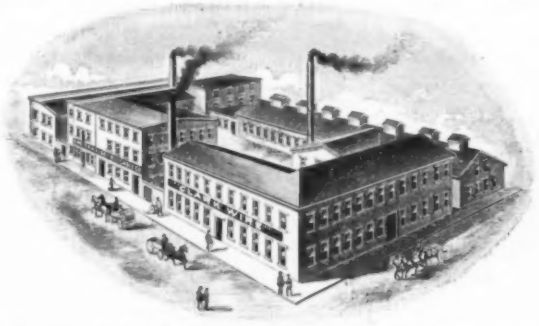
THERE is, it is said, some considerable talk at Washington on the subject of an import duty on crude rubber. The *Gazette* understands perfectly that there will be tariff legislation at the next session of Congress, and legislation of a radical character, but it does not believe that the crude rubber will be put on the dutiable list. It has been pointed out that the Democratic party is so thoroughly opposed to tariff for protection to wealthy manufacturers that it will oppose the wishes of rubber-manufacturers and place rubber on the dutiable list merely for spite-work. Another theory is that the Democratic principle of tariff for revenue only could not be more appropriately applied than to crude rubber.

The *Gazette* does not see sufficient cause in either theory to change the stand taken above. Crude rubber is an article which must be used in the United States, and which cannot be obtained from any part of our country. It must be imported from foreign countries, and to put a duty on it is to extract the amount of that duty from the pockets of the American people. Not only this, but manufacturers who use rubber are so combined that should rubber be taxed this tax would be made the basis for an advance in prices of the finished product which would yield the manufacturers an additional income, and thus actually benefit them.

Beyond all this, it is the distinctly-expressed policy of the party in power to place on the free list all raw materials, and that crude rubber is a raw material cannot be denied by any, however ignorant. There will be no duty on crude rubber if the principles of Democracy are observed.

THE EASTERN ELECTRIC CABLE CO.

THE amount of rubber used in the insulation of wire has of late attracted a great deal of attention, and the insulated-wire business has become one of the largest lines of manufacture that the India-rubber industry affords. The rubber-covered wire of the Eastern Electric Cable Co. is well known, but the home of the industry in Roxbury, Mass., is perhaps not gener-



ally known. The business was begun in 1885, under patents granted to Mr. H. A. Clark. Starting in a small building he made the Clark wire for two years, when he found that the plant was too small, and was forced to enlarge it. Since then, as the demand has increased year by year, the company have purchased the whole of the premises which they first leased, and now have four large buildings fronting on Hampshire and Culvert streets. Even with their new and complete plant the company run the machinery day and night to keep up with their orders, and they are to-day breaking ground for additional buildings which will consist of a building 45x151 feet, three stories in height; and a power-house 40x50 feet, containing three 80-horse-power Kendall boilers and a 125-horse-power Fitchburg engine. The rubber-covered wire that this company make is largely used for submarine, underground, and interior work for electric-light and -power purposes. The active men in the company are Henry A. Clark, general-manager and treasurer, and Herbert H. Eustis, president and electrician. To the knowledge of the business and push of these two gentlemen is due largely the remarkable success of the Clark wire.

WILL IT SUPERSEDE HARD RUBBER?

IT has already been published in a variety of trade-papers that Ramie fiber made solid under hydraulic pressure produces a substance that is similar to the hard rubber in many respects, but no more difficult to work. It remains very light and becomes 2½ times as strong as steel. It is not hygroscopic, and therefore can be used in many places where vulcanized fiber would fail. It will neither swell nor shrink when heat is applied, which is a quality that will render it remarkably useful in a host of different ways. For a variety of uses, therefore, this product should be very valuable, that is, when Ramie is an article that can be readily purchased in the open market, when the proper tools and requisite skill have been attained to work it economically.

RUBBER FOR RAISING SUNKEN SHIPS.

THE associated press dispatches of May 23, contained the following news from Trenton, N. J.: The M. Cavanagh Wrecking Co., with a capital stock of $2,000,000, have filed articles of incorporation with the Secretary of State and will begin the business of raising sunken ships and vessels at once. The plan is altogether novel. It utilizes large rubber bags which are placed in the hold of the sunken vessel by divers. The bags are connected by hose to automatic air pumps on floats above the wrecks. Air is forced into these bags, and they expand until they fill the entire hold of the vessel, excluding all water, which causes the vessel to come to the surface. The incorporators are John, James, and Joseph Grant, three brothers residing at Tacoma, Washington. The resident incorporator is J. Herbert Potts of Jersey City. The first work of the new incorporation will be an exhibition of its machinery in connection with an effort to raise the steamship *Oregon*, sunken off Fire Island.

FACTORY METHODS IN GERMANY.

IN Germany the employment of women in rubber factories is common in every branch except where heavy labor is required. Probably female labor is no more utilized there than in the United States. The German artisan has a longer dinner hour than here, and in that way is enabled to work more hours per day than here, the long nooning bringing him up fresh for a long pull before twilight. As a rule a great deal of work is done at home in other than the rubber industries, but the character of the work in the latter does not allow of this. The workman is paid for so many pieces, the subdivision being greater than here. This plan of greater subdivision allows of the employment of less intelligent labor, as the making of one part, occupying a single motion, is mechanical and does not bring into play but one faculty; the most ordinary workman everywhere turning his attention from one subject to another with difficulty. This accounts in part for the great disparity of wages in Germany as compared with America.

UNITED STATES IMPORTS OF INDIA-RUBBER MANUFACTURES.

By Fiscal Years, Beginning with 1855.

[Statement prepared for THE INDIA RUBBER WORLD by the Bureau of Statistics of the Treasury Department at Washington.]

NOTE.—The Treasury records contain no separate enumeration of manufactures of India-rubber and Gutta-percha for any year previous to 1855. The different classifications obtaining in the Customs service at different periods were due to changes in the tariff schedules from time to time.

YEAR Ending June 30—	DESCRIPTION OF IMPORTS.				VALUE.
				India rubber Shoes and other manufactures.	TOTAL.
1855				$ 43,720.00	$43,720.00
1856				97,796.00	97,796.00
1857				180,585.00	180,585.00
			Gutta-Percha manufactures.	India-rubber manufactures.	
1858			$ 586.00	$89 245.00	89,831.00
1859			1,688.00	190,314.00	192,002.00
1860			494.00	243,296 00	243,790.00
			India-rubber Boots and Shoes.	Manufactures not specified.	
1861			$ 52.00	$288,457.00	288,509 00
				I.-r and G.-p. webbing and manufactures	
1862				$256,342.00	256,342.00
				I.-r and G.-p. manufactures.	
1863				$475,991.00	475,991.00
1864				647,004 00	647,004.00
			Shoes, boots, webbing, etc.	India-rubber and silk.	
1865			$187,950.00	$77,922.00	264,972.00
1866			710,912.00	340,084.00	1,050,996.00
1867			352,619.00	269,951.00	622,570.00
	Gutta-percha manufactures.	Manufactures wholly of I.-r.	I.-r. webbing and other manuf's.	I.-r. manuf's not otherwise spec.	
1868	$ 3,118.31	$ ..(a)....	$456,857.58	$.....	459,975 89
1869	7,636.33	..(a)....	525,237.77	1,819.00	534,693.10
1870	8,187.00	..(a)....	494,080.40	439.00	502,706.40
1871	11,642.00	..(a)....	627,080 40	1,015 00	639,737.40
1872	26,463.00	..(a)....	607,813 74	9,999 00	644,275.74
1873	17,705.35	..(a)....	634,495.93	15,899.87	668,101.18
1874	15,020 52	..(a)....	603,195.15	47,504.35	665,720 02
1875	6,500.55	26,905 82	440,378.00	15,582.86	489,367.23
1876	5,201.00	40,810.92	341,234.40	3,272.89	390,519 21
1877	4,052.00	37,614.25	232,277.52	2,156.45	276,100.22
1878	6,056.00	27,681.79	177,160.00	2,585 00	213,482.79
	Gutta-percha manufactures.	India-rubber boots and shoes.	Braces, webbing, etc.	Sheet rubber.	Other I.-r. manufactures.	
1879	$12,506,00	$1,423.60	$126,448.62	$1,562.00	$28,974.66	170,814.28
1880	12,204.00	50.35	247,653.88	3,362 00	34,328.87	347,599.05
1881	19 884.00	156.20	190,580.93	3,738 00	48,554.22	418,043.35
1882	23,812.00	107.38	224,347.62	4,756 00	71,234.55	324,257.65
1883	18,750.00	153.75	206,810.04	5,364,00	71,629.00	302,706.79
	Gutta-percha manufactures.	India-rubber boots and shoes.	Other I.-r. manufactures.	I.-r. with other materials.	
1884	$80,363.95	$4,036.90	$110,026.54	$116,532.50	310,959.89
1885	28,555.59	161.00	79,760.86	109.974.88	218,452 33
1886	43,513.00	1,233.95	81,750.59	103,052.34	229,549.88
1887	42,112.25	3,429.00	98,291.60	118,962.70	262,795.55
1888	67,223.50	8,428.00	113,635.94	103.927.45	293,214.89
1889	101,102.80	2,326.74	136,271.50	95,210.08	334,911.12
1890	113,131.40	5,440.00	149,810.27	95,667.11	364,048.78
1891 (c)	79,885.90	269.00	223,685.38	34,575.00	338,415 20
1892 (c)	60,941.36	.....	317,228.38	..(b)..	378,169.74

(a) Not separately enumerated until 1875. (b) Not separately enumerated.
(c) Hard rubber was imported in 1891 valued at $57,974.48 and in 1892 at $54,396.45, which should be added to the totals for those years.

IN the office of the New York Belting and Packing Co. was recently seen a rubber coin-mat of an elasticity of about two to one. This makes a very good quality. If the pins or points do not rebound quickly the coin will not take an end position, the result for which the coin mat was invented. Pure rubber, however, has its drawbacks, for the animal fats exuding from the hand are said to be like oil in their effect, and a mat of excellent quality is soon ruined. The prices of mats are slowly yielding, although a dollar would seem to be a fair price for an article of the character required in the device.

FRIEND—Got that new patent pneumatic sulky of yours done?

Inventor—All complete now. There is only one trouble.

"What's that?"

"It keeps getting ahead of the horse."—*New York Weekly.*

THE MANUFACTURE AND PROPERTIES OF CELLULOID.

*By Walter Hogben, F. C. S., Edinburgh.**

A GROWING interest in the composite known as celluloid has of late shown itself in the form of newspaper and other criticisms. It is not too much to say, however, that these exhibit, in many cases, gross ignorance of the thing spoken of.

There is considerable fascination in the subject, not only for the scientist, but for the great public that handles and wears the many beautiful objects made. Although, in one form or another, celluloid is to be found widespread, the fact is that a little of the article goes a long way, and it will probably surprise many to learn that there are only some half-dozen factories in the whole world, of which that in New Jersey, in the United States, is the largest. The total yearly output of the manufacture may be roughly reckoned at 1800 tons. This in most other materials would seem a very moderate quantity indeed. But there are to be taken into account the facts that the production is a very difficult manufacture in itself, and that in forming from the raw material the almost countless variety of objects, in many colors, the processes employed are of great intricacy.

Perhaps the finest display ever submitted to the public gaze at one time and in one place was that shown at the recent Paris Exhibition, where, among numerous wonders, a special interest attached to the production of flowers. The forms of these were delicately reproduced and the colors were exquisitely blended in a manner wholly beyond reach in any other known material. But the fact is, we all handle the compound in one shape or other nowadays, whether we know it or not, from the brilliantly-colored ball that enlivens infancy, down to the false gums that repair the breaches of age.

Never was anything more dependent on other things for its very call to existence than celluloid. It has hardly any real existence, indeed, for and of itself, so to speak. It is an imitation or it is nothing. It owes everything to the manner in which it allows itself to be fashioned or colored to represent other, and, for the most part, costlier things. The imitations are often striking and successful; although there are, no doubt, some which are distinctly inferior. It is on the reproduction of our luxuries rather than our necessities that the industry feeds and grows; and, in its endeavors to spread itself, it may be said without prejudice to be in touch with the democracy of the age, in so far as it gives to the people, at a reasonable price, ornaments or articles of use, in form and color all but identical with the genuine article, for which, of course, extravagant prices are obtained. As in art a cottage may have, in what Mr. Ruskin calls one of "the black arts" (photography), or in color, representations of the works of a master whose picture itself knows no duplicate as far as he is concerned, hanging, as it does, in many cases, in a private gallery in view of severely restricted visitors—so a man may, in these days, with wages that little afford high-class laundry costs, have in celluloid, immaculate linen; smoke a pipe with elaborate amber mouthpiece; cut his newspaper by means of a large tortoise-shell knife; present his wife on her birthday with his photograph in a malachite frame, while that lady herself may make a stylish toilet by means of articles apparently absurdly beyond her reach, pay for them out of a purse cut seemingly out of a huge turquoise, and leave at her neighbor's a card which was housed in massive ivory, to all appearance from the center of the tusk.

To pass on to the material itself, although that is called celluloid, it is also known as phibrolithoid, xylonite, and lithoid. America may probably claim the discovery of this interesting and beautiful product, as of so many other marvelous things in different directions—the name of a Mr. Hyatt, of Newark, being associated with the honor—but it is worth mention that Mr. Alexander Parkes, an English chemist, who died but recently, patented, about the same time, a material which was practically identical, called after himself, Parkesine.

The process of manufacture, as might be expected, and as has already been said, is an intricate one. But a brief outline in simple forms may be given here.

The basis of the manufacture is what is known as cellulose, of which bleached cotton may be taken as the type. In the process of bleaching the fiber frees itself from foreign substances, such as resin and grease. This is generally done by the use of bleaching-powder (chlorid of lime) and other well-known bleaches. A number of cellulose-producers abroad have, however, recently adopted electricity as a means of purifying the pulp which they severally employ. It may be explained that those referred to are paper-makers, and that the pulp from which paper is made is practically cellulose. The electric machine used for this purpose is of an exceeding ingenious character, although we of this country have hitherto fought shy of it. This bleaching by electricity—known as electrolysis—is simply a means of liberating the chlorine contained in the salts employed for use in the ordinary manner.

The elements of which cellulose is composed are carbon, hydrogen, and oxygen—the hydrogen and oxygen being in the same proportions relative to one another as in the case of water, and, for this reason, cellulose is classed, in chemical language, in the group known as carbo-hydrates. Under the microscope it is, when pure, a white translucent substance, but in the mass it appears more or less opaque. Science, with all its strides—and these are compassed with seven-league boots in modern times—has not yet overtaken a direct means of rendering cellulose soluble or gelatinous, as nature herself does in, for instance, the formation of cells in plants and stones in fruit. It is true cellulose has been dissolved in the laboratory by what is

* Reprinted from *The Scotsman*.

known as the ammonia-copper reagent; but, for various reasons known to chemists, the method employed is quite useless for the purposes in view. In some way or other it is necessary in the production of celluloid to deal with gelatinous cellulose, and, seeing no satisfactory direct method is attainable, the difficulty has been overcome, in an indirect manner, by using certain strong acids which change the character of the cellulose into a different substance readily dissolvable in suitable reagents. This done, a kneading and rolling process is gone through, somewhat after the manner of making puff paste; and the different appearances of the various articles to be represented having been given to it, the material is afterwards dried. The form in which we now find it permits of its being readily turned, molded, or carved into an immense variety of articles. These are ever increasing in number, a large proportion of them have to do with our amusements. Billiard-balls, dice, chessmen, dominoes, piano- and organ-keys, may all be had in celluloid, instead of ivory, bone, or wood; and, last but not least, the ubiquitous game of golf has laid hold of it in the shape of supplying an always-white ball, and is also giving it a place on the face of clubs instead of horn. Articles in every-day use, such as combs, paper-knives, handles for knives, forks, sticks, and umbrellas, are becoming more and more common in celluloid; while wearing apparel has a large representation in collars, cuffs, and even neckties.

No doubt celluloid is highly combustible; but this fact is no excuse for the nonsense that is sown broadcast on the subject. The ladies, who are afraid of their combs taking fire, may as well extend their caution to the hair in which the combs are set. The fact is, the hair would blaze before the celluloid. As for pipe mouthpieces, it need not excite wonder if those, too, flame up when fired. It is not generally known that amber itself—which is imitated with singular success in celluloid—burns freely after the manner of sealing-wax. The experiment is too costly, probably, to be tried by the amateur who owns the pipe; and yet it is so. Ignorance reaches its height, however, in the reference that appeared in an old and high class London newspaper recently, when cyclists were solemnly warned that the mere contact of a celluloid collar with the heated neck might induce ignition, and the disaster prove fatal. These are absolutely groundless apprehensions. Celluloid may be boiled and subjected to considerable heat without taking fire. In fact, it may generally be stated that it needs to be lit by flame itself, and, it may be added, that it is in no sense explosive.

Many as are the uses already found for this beautiful composite, it is safe to prophesy still larger applications in days to come. When the imitation is good it commands a market. It may not only succeed in standing in place of the genuine article when the latter is not to be had, but the sham may even be preferred to the true when there is no dearth. Considerable quantities, for example, of brightly-colored rings and necklaces go to the east; and, finding their way into Africa, may not the imagination easily follow them (so strange is the irony of life sometimes!) until it sees, it may be, the false product blithely bartered, like spurious coins, for the genuine elephant's tusk?

THE HEALTH OF RUBBER-FACTORY OPERATIVES.

AT one of the meetings of the Boston Society for Medical Improvement, reported in the files of the *Boston Medical and Surgical Journal*, there was a discussion growing out of a sudden death in a rubber-factory, and an inquiry into the effects of the inhalation of naphtha. The discussion follows:

DR. E. S. WOOD: Within the past year a case came under my observation, a legal case, in which a boy employed in the rubber works in South Boston, it was claimed, had not been warned in regard to any unfavorable effect which the naphtha vapor might have upon him. His work was to regulate some part of the machinery intended for pressing the rubber. The rubber was placed in the tank in which were forty gallons of naphtha, and allowed to remain until it had become of suitable consistency, that is, it was largely dissolved; no bisulphid of carbon was used. Then this solution was allowed to flow slowly from the tank between a couple of rollers, and there rolled into sheet rubber. When the rubber was rolled out into sheets as it was poured between the rollers there was a large surface exposed to the air, and a great deal of naphtha vapor escaped. This boy was directed to insert a wedge in some portion of the machinery near the cog-wheels, and his statement is that the room was not very well ventilated; at any rate, he was exposed to the action of an unduly large quantity of naphtha vapor. When he went to insert the wedge, where he was instructed to insert it, he became dizzy. To prevent himself from falling, he grasped at the first thing he could and got his hand caught in the cogs, and received such an injury that it necessitated his being carried to the city hospital and his arm amputated. This case went to trial and the jury disagreed.

There did not seem to be any doubt in my mind but what the boy was made dizzy by the effect of the naphtha vapor, and the inquiries made at the refining works at Atlantic City have shown that the workmen employed at those departments of the work where there are large quantities of vapor are liable frequently to be made dizzy and have a species of intoxication, which may go so far as to produce complete unconsciousness. I have never seen any record of convulsions having been produced, but there are records of cases of unconsciousness, although the patients, as a rule, recover as soon as carried into the fresh air. There are some records which have been given showing that there may be even such an amount of cerebral disturbance as to produce a sort of acute delirium, from which the patient recovers as soon as carried into the fresh air; there is also the record that one of the superintendents at Point Breeze, although accustomed to inhale naphtha vapor, went to investigate a leak in one of the naphtha

canals and was made unconscious in two minutes; and there are some statements recorded to the effect that an adult may be made unconscious in from two to seven minutes after the inhalation of a few grams of naphtha vapor.

The workmen employed in handling the light naphthas, gasolene, rhigolene, etc., in pouring by means of pails from the tanks into casks or barrels may inhale a sufficient quantity to be made dizzy, to have ringing in the ears, and more or less of the first symptoms of intoxication, and unconsciousness has been produced in those cases in workmen. I have seen a statement that death has occurred, although in the vast majority of cases recovery takes place immediately upon the patient being taken to to the open air. Death has resulted from the unconsciousness produced in those engaged in cleaning the tanks in these refining works and working in confined spaces where there has not been proper ventilation.

DR. STURGIS: I have been rather interested in the workers in rubber-factories for the last three or four years. All the cases have been chronic. I have not been able to deduce much from the cases I have seen. They generally occurred in the women engaged in making up gossamer cloth. The effect seemed to be cumulative. Girls would work some months or years before they were affected. The heart seemed to be first affected. There was a tendency to syncope and a good deal of præcordial distress and palpitation on the least exertion. The pulse in most cases was very feeble, and the first sound of the heart sharp and short. Generally there was a hæmic murmur, and there may or may not have been a venous hum in the neck. Menstruation was generally scanty. A good many of the patients complained of dizziness. I found that the cases were all rather difficult to treat, did not yield to the treatment of ordinary anæmia. Iron did not seem to do much good, although the stomach was generally in good condition.

DR. KNAPP: I have seen quite a number of women working in the various rubber factories, but I have not seen any who presented any symptoms which I was disposed to ascribe definitely to naphtha. The majority of the cases have been cases such as we see very commonly in working women who do not work in rubber-factories. They were anæmic and debilitated, neurasthenic, and complained of the ordinary run of rather indefinite symptoms. As a general thing, they seem to be underfed, living in rather poor hygienic surroundings, and most of them seemed to improve with considerable rapidity when properly fed and their supply of tea was cut off. Their trouble seemed clearly due to ordinary causes and not to naphtha. They were given an ordinary tonic. I recall now but one case where I thought the symptoms were due definitely to the work in the rubber-factory. That was a man who had been working in a factory for some time and had been using in addition to the naphtha, bisulphid of carbon. He had some slight symptoms of pain and weakness and paræsthesia in the arms. It seemed to me a very slight multiple neuritis which I supposed was due to the bisulphid of carbon; it was more likely to be due to that than to the naphtha. He had a still slighter neuritis in the legs.

DR. G. B. SHATTUCK: I remember two patients at the city hospital, girls who had worked in a rubber factory. They had marked anæmia and debility and a slight neuritis. They had not had to do with the bisulphid of carbon, and they did not respond to the treatment for anæmia.

DR. W. D. HODGES: I should like to mention the case of a man who was engaged in filling a receiver with gasolene, and after having almost emptied the barrel a leak was discovered in the receiver. He entered the gas-pit, which was six feet square, to stop it, and was immediately rendered unconscious. Upon removing him from the gas-pit consciousness soon returned.

DR. FARLOW: It is important to bear in mind when inquiring into the complaints of workers in rubber factories, that in some parts of the work considerable naphtha is used, for instance, in the room where cloth is covered with liquid rubber, while in other parts very little or no naphtha is used and the symptoms must be due to something else.

THE WIDE FIELD OF THE RUBBER SUPERINTENDENT.

SAID a successful rubber-manufacturer in talking of superintendents: "I used to think it a pity that there was not a school somewhere that devoted a part of its time to the practical combination of rubber in all lines of manufacture. The difficulty that we all experience, especially where we make a general line of goods, is that we cannot find all-round rubber-men. A man is thoroughly conversant with boots and shoes, for example. He knows all the compounds, is a good calender-man, and is an expert heater-man. If need be he can make a good batch of varnish. In addition to this, he has learned little by little the thousand-and-one knacks that cluster about that line of business. Now let him try to make belting, packing, and hose, or indeed any of the goods that are comprehended under the general term 'mechanical rubber goods,' and he is all at sea. To be successful he must learn over again the whole business of superintending the manufacture of rubber goods.

"If he tries hard-rubber goods he is as badly off. He knows not the A. B. C. of the production of vulcanite. He may do something in clothing, as he has a knowledge of dry heats, but even then he will probably be a failure. Let him try druggist's sundries, stationer's rubber goods, or surgical goods, and in each he will find necessary different compounds and different ways of handling the same gums. Then there are the smaller but not less important lines where rubber is used—dental rubber, thread, shields, porous plasters, chewing gum, and lastly that new and important branch, insulated wire. None of these lines he knows, and yet all of them would open to him possibilities in his own line that are now unthought of. Until he does know what is done in these branches he can never know what rubber is capable of, and

how he can use it to solve the problems that confront him daily. Then in the matter of cures, why should not the thoroughly equipped rubber superintendent know just what are the various cures used, as the sulphur, the iodine, the vapor, and the acid cure. Suppose he uses only one of them, the knowledge of the others broadens him and gives him a better appreciation of results.

"That is why I so warmly welcomed THE INDIA RUBBER WORLD when it proved itself a success. It gives our men a look at other processes than their own, and it sets a man thinking when he finds that other men are accomplishing results that he had deemed unattainable. My own superintendent is a first-class man and a bright one. A few years ago, when a rival firm suddenly produced goods that were the equal of his in quality and yet far under them in price, his invariable excuse was that they were losing money on them, as it was not possible to obtain such results for less money than his cost. To-day he has no such plea. He has grown to feel that other bright minds are at work on the same problem that he strives to solve, and that in some cases they are getting there before he does. In other words, he reads THE WORLD as if it were his rubber gospel.

"Another thing: When I see a young man in my factory or my store who is on the lookout for new points in the business; when I see him studying the organ of our trade, looking through the advertisements of the other firms and posting himself on rubber in every way he can, I make up my mind that he is one that I can afford to advance."

THE CYCLE-TIRE FACTORY AT HARTFORD.

EVERY rubber-factory has its peculiarities, the result of the careful study of those who have it in charge, and who may have been pioneers in bringing about some improvement in the manufacture of rubber goods. In this respect the Hartford Rubber Works Co. are not an exception. This concern is devoted chiefly to the interests of the Pope Manufacturing Co. and its principal business is to furnish bicycle-tires for that mammoth concern. Still it finds in its capacity opportunities for furnishing other bicycle firms with tires, as well as making some other mechanical rubber goods.

One notable feature of this plant is its operation without gear-wheels. Before this was done at Hartford it was claimed to be impracticable, but careful study evolved a plan which works exceedingly well,—so well that the managers of the company have no desire to adopt the plan usually in vogue. The engine used is one of 305 horse-power, and the power is taken up and distributed by five wheels with belts, two being 42 inches wide, two 36, and one 18 inches. One of the wheels is 18 feet in diameter and three 14 feet. There is also an auxiliary engine of 125 horse-power. This plan, it is said, makes a smooth-working mill with plenty of power and the great friction of the gear-wheel is avoided.

The output of the mill is about 900 pneumatic tires per day, giving employment to two calenders, fourteen grinders, and seventeen hydraulic presses. The presses have three plates each, one being five by ten feet.

There is connected with the operation of the factory an artificial lake 300 by 150 feet in extent with a depth of seven feet. This water is furnished by the city and is used several times before it is discarded and a fresh supply taken on. Pumps are used having a capacity of 1500 gallons per minute, or two thirds as much as is required by the fire-department of the city of Hartford. The mill is thoroughly equipped with automatic sprinklers.

The dimensions of the different parts of the factory are stated as follows: The press-room is 40x160 feet; the mill-room 40x90 feet; the store-room 38x90 feet; the drying-room 40x116 feet; the "pneumatic" room 40x140 feet, and the machine-shop 40x40 feet. In the drying-room there were at the time of a recent visit $150,000 worth of crude rubber, and these figures go far to show the enormous consumption of gum going on in this comparatively new business. The storehouse was filled with bins 6x13 feet square, in which the different grades of rubber could be separately stored with great convenience for use.

The operation of making tires is simple. The sheet of rubber is cut into widths representing the circumference of a tire and the edges are deftly brought together by the workmen and cemented. This tube, which forms the inner layer of the tire, is placed upon the cylindrical form and the workman at another table proceeds to wrap the duck around it. The duck cut bias into strips is rapidly placed over the inner layer upon the whole of which another tube of rubber is formed, the whole being vulcanized together. The duck being cut bias follows out the dressmaker's principle that a facing cannot be smoothly spread and attached to another surface if placed on regularly and squarely. Nor can a circle over a tube of rubber be accurately made unless this means be adopted. In the high grade of workmanship necessary to the manufacture of the present standard of the pneumatic tire nothing but the best materials obtainable can be allowed, with a most careful inspection afterwards.

The inspection of pneumatic tires at the Hartford Rubber Works Co. is carried on in this wise: A tire after being finished is inflated at a pressure of fifty pounds to the square inch. It is then laid aside for twenty-four hours, and if it does not show signs of flabbiness it is passed. If, however, there are suspicions that it may not be all right, it is immersed in a shallow tank of water before a workman who watches for bubbles; should these appear a sharp knife cuts the tire, and the rent is made so large that it is fit for nothing but the waste-heap, whence it is consigned. Naturally few are found in the course of the day, but the workman is ambitious to find as many as possible and his pleasure in slitting a tire into absolute uselessness can be likened to that of landing a trout by an ardent fisherman from a sparsely-stocked brook.

The duck used by the Hartford Rubber Works Co. for the "Columbia" tire is very closely woven, is soft to the

touch, and at the same time is very strong. The finish which is incidentally imparted to it in the excellence of its manufacture is such that Treasurer Parker has seized the opportunity to avail himself of its qualities in a suit of clothes made from it, which doubtless will make him an object of envy to all who aspire to be well-dressed.

The Hartford company have made tires for the "Jumbo" wheel, a promised novelty on our roads. A vehicle with wheels as large as a barn-door, between which the rider sits, and which is equipped with pneumatic tires, may disclose advantages that will lead to something very popular.

One feature of the works is that everything is neat, no litter being allowed. The woodwork everywhere is polished, and there is plenty of room for all operations, the whole showing a high standard of management. Naturally much is due to Mr. Lewis D. Parker, the treasurer, and his assistants, for all this, but he appears to have an abundance of means to carry out his ideas of what ought to be a standard in operations of the character entrusted to him.

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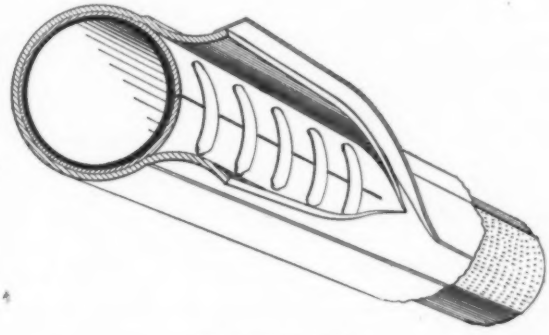
THE "WHIPPET" TIRE.

THE "Whippet" tire, a patent for which has been applied for, has many advantages, some of which are peculiar to it. It has an endless or continuous air-chamber, avoiding the troubles of a "butted-end" air-chamber. It is made with four laced pockets, each ten inches in length formed with flaps folding over the laces to prevent the rim-cement working through, which in such case often damages the air-chamber, and which also stiffens the laces and renders them unfit for use after repairing a puncture. The repairing of this tire is unusually simple. The seat of the puncture having been found by the water-inflation method, the tire is unlaced and slipped around until the



THE WHIPPET TIRE.

defect is exposed, when the air-chamber can readily be lifted and repaired. This tire is said to be as light as any of the rim-cement tires and is guaranteed not to burst under the rider. It is made and sold by the New York Belting and Packing Co., Limited, New York.

The method of repairing the tires of the New York Belting and Packing Co. is given as follows: After locating the puncture, the part surrounding should be dried and a thin coat of cement extending a half-inch around applied; upon this a patch of pure rubber should be pressed firmly, and the repair in itself is complete. For long cuts, a piece of rubber on the inside and the outside is applied, both being cemented.

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RUBBER TIRES FOR ROAD-WAGONS.

THE New York Belting and Packing Co. announce that they are ready to supply the Burris-Michelin pneumatic tires for full-sized road-wagons, surreys, victorias, broughams, landaus, and coaches. They will also supply within two weeks from receipt of order, hickory wheels fitted with this tire, and for such wheels this tire is said to be eminently fitted. The reason for this is that the shape of the rim admits of the felly of the wheel being placed in the exterior recess of the rim, which prevents any possibility of the tire shifting position. Punctures in this tire can be repaired on the road within a few minutes.

As the adaptation of the pneumatic tire to road vehicles is of recent date, and as the Belting and Packing company have launched out into a regularly-organized business of this sort, a list of their prices may be of interest as to the cost of this unique luxury. They are as follows:

	Per Pair.
Sulky pneumatic tires with rims for 28- or 30-inch wheels	$35.00
Sulky pneumatic tires with rims for 43-inch wheels	45.00
Sulky pneumatic tires with rims for 47-inch wheels	50.00
Light road-wagon pneumatic tires, with rims for 43-inch wheels	50.00
Light road-wagon pneumatic tires with rims for 47-inch wheels	50.00
Extra air-chamber for 28- or 30-inch sulky wheels, each	4.00
Extra air-chamber for 43-inch sulky wheels, each	5.00
Extra air-chamber for 47-inch sulky wheels, each	5.50

The price of hickory wheels fitted with the Burris-Michelin tire is as follows:

	Per Pair.
28-inch sulky wheel 1¾-inch tire without bearings	$50.00
30-inch sulky wheel 1¾-inch tire without bearings	50.00
43-inch sulky wheel 1¾-inch tire without bearings	60.00
47-inch sulky wheel 1¾-inch tire without bearings	65.00
43-inch light road-wagon wheel 1¾-inch tire	65.00
47-inch light road-wagon wheel 1¾-inch tire	70.00

A 28- or 30-inch hickory sulky-wheel with 1¾ inch Burris Michelin tire and Plumb's patent ball bearings with lock-nut costs $75 per pair. The company state that so far they cannot keep pace with their orders.

RUBBER, WITH THE ACCENT ON THE RUB.

WHEN Henry M. Stanley, the African explorer, visited America the last time he stated that the interior of the "Dark Continent" held immense forests of rubber trees. A representative of THE INDIA RUBBER WORLD, wishing to secure more information on this matter, attempted to interview him in New York and was unable to do so. A week later, hearing that Stanley was in Boston, he tried again. This time he was very nearly successful because of a serious mistake. The "Cerberus" who guarded Mr. Stanley from unwelcome visitors was a Frenchman who knew English indifferently. When, therefore, the reporter explained his errand he listened attentively, bowed gravely, and said:

"Ze Rubber Whirl?"

"Yes," replied the reporter.

"Ah, oui, M. Stanlee expic you."

"Then I am to see him?" was the delighted exclamation.

"Certainlee—Alphonse, zis ees ze rubber man,—ze massage—take him to M. Stanlee."

INDIA-RUBBER SCRAP.

IN the new Treasury regulations for the prevention of the importation of cholera, it is stated that rubber goods, being liable to be injured by steam disinfection, should be fully submerged in a 2 per cent. carbolic-acid solution, an alternative for textile fabrics being a bichlorid solution of 2 to 800.

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FINE Pará is distinguished by the evenness of its layers, and the fineness of its texture, and has in common with all Pará grades a peculiar smell,—that of bacon, which is given to it by the smoke of the palm nuts. The coarse, or sernamby, grade is made up of the drippings which are gathered with the dirt and formed into a biscuit. New fine Pará will shrink from 18 to 20 per cent.; old from 12 to 15; coarse 30 to 35; and up-river 25 to 30.

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A NOVELTY in rubber stamps is the vulcanization of the letters to a cushion, also of rubber, the whole being attached to the wooden part of the stamp. The cushion is one-quarter of an inch thick and encloses cross-pieces of rubber placed one-quarter of an inch apart. The cushion thus made has, in addition to the usual resiliency of rubber, that of air, which yields laterally. The stamp is specially adapted to printing irregular surfaces, such as bulky envelopes not smoothly filled. It is very simple and at the same time very efficacious.

* * *

THE use of hard rubber in harness work has grown to considerable proportions, the finish it gives being of such character as to make it desirable to those who desire fine turnouts. For a long time poor material was worked in and the article dropped into some disrepute, and the royalty given to the patentee also placed it beyond the ready means of the ordinary purchaser. But the patent has now expired, and while harness finished in this way is not cheap still it is more in use. All the rings, martingales, turrets, hooks, and buckles are covered in this manner, and do not require so much care as those made of metal in whole.

* * *

A FRENCH firm are exploiting at the World's Fair chalk which comes from Texas. The bed is as large as England itself and has only lately been known. It is said to be the only bed of the kind in the United States.

* * *

TOBACCONISTS say the best pipe for smoking is the common clay, which has the advantage that when it becomes in the least foul, it is so cheap that it can be thrown away. Other pipes are too expensive for that disposition of them. A gross of pipes costs $1.35. But one objection to them is in the taste of the clay. This is obviated, it has been found, by taking a piece of hard-rubber tubing and slipping it over the stem. Now if some rubber-man will make the pieces of tubing with a little ridge at the end similar to what is placed on other pipes, or study up an adaptation of it, the might introduce a new wrinkle into the tobacco trade.

* * *

AN exchange claims that rubber would now be selling at 5 cents a pound more than quoted prices if it was not considered *policy* on the part of receivers, who are largely interested in the rubber combinations, to retard the advance. In this connection it may be noted that manufacturers of rubber clothing, gossamers, etc., are inundated with orders, probably caused by heavy purchasing throughout the trade, which is in daily fear that these manufactories may also be absorbed by existing combines, or a new one formed that would immediately advance prices. Luckily for all concerned, cotton has gone down about as fast as rubber has advanced.—*Shoe and Leather Facts.*

* * *

A CHICAGO newspaper states that the production of rubber boots and shoes is equal to one pair annually for each inhabitant of the United States. Hardly. There are about 63,000,000 people in the United States and a leading manufacturer states that only about 42,000,000 pairs were made last season. This is a maximum calculation, however, others placing it at a few millions less. A half pair to each inhabitant would be more nearly correct. Railroad-men and those engaged in severe outdoor labor use three and four pairs of Arctics every year, but there is a good number of the population, particularly in the south, that never wear a rubber shoe. Standing on Broadway, in New York, on a wet day, one will be surprised at the number of people who are rubberless.

* * *

YEARS ago an inventor bought out what was styled a return ball, and to the surprise of every one he made a comfortable fortune out of it. It consisted of a wooden sphere with a rubber cord attached to it so that the child could throw it from him and the rubber string would cause it to come back to the hand. The child armed with it, however, kept the window-glazier and other artisans busy on repairs, and the ball fell into disuse. Lately the experiment of using a rubber ball is being made, and the toy with this change is being rapidly put on the market.

* * *

THE railroads buy many mechanical rubber goods, but not all in one market. The roads that have an entrance in New York generally make their purchases there, as also do the Reading and the New York and New England. The Baltimore and Ohio purchases in Philadelphia and so does the Pennsylvania to a large extent. The Southern roads, which are compelled to seek long credit, come to New York. The Louisville and Nashville, however, buys in Louisville, Cincinnati, and Chattanooga; the "Granger" roads in Chicago; the Pacifics in San Francisco and Portland, Oregon; the Union and Missouri Pacifics in Omaha and St. Louis, and the New England roads in Boston. The steamship lines generally buy abroad, getting nothing here the purchase of which can be postponed. Valves, however, are bought here, because of their superior quality. Railroads and steamships are good customers and good pay, with the exception of one or two that have not exactly reached the receiver's hands. That goal reached, they will pay promptly.

* * *

IN a report on "American Trade in Haiti," the United States Consul General at Port-au-Prince, Mr. John S. Durham, writes: "Rubber goods are not generally used, and the excessive heat is unfavorable to the development of a market. The few rubber shoes and mackintoshes used come from New York."

* * *

THE touching of a telegraph-key with an ivory plate for the finger-piece recalls the time before the adoption of hard rubber for that purpose. Before the civil war the ivory key was in universal use, but hard rubber was cheaper and gradually came into the telegraph offices. It was also better adapted to the purpose and was welcomed by the operator, so that the ivory handle at Chicago is really a step backward. At that time metal switches

called "button" were used and the number of shocks received by the operators in turning them were numerous. So a little later on hard-rubber handles were placed upon them, and a serious annoyance obviated. Then the board switch with its long hard-rubber handled plugs came into vogue, and afterwards the rubber handle plug pin which is now in universal use. Without rubber telegraphy in its convenience in operation would be a sort of "back number."

* * *

NOISELESS slates are now almost universal. Soft rubber corners or knobs would be much better in looks than the ordinary material used.

* * *

SOME of the best hotels will have no chairs in their dining-rooms except those with rubber tips. The desirability of lessening noise in public places is receiving more attention, and rubber has qualifications in a high degree in this direction.

IN DOW'S elevators, on the Brooklyn front, opposite New York city, there are six miles of rubber belts, operated by two engines of 400 horse-power each. These belts take the grain to every part of the building. Two belts are used in connection with a conveyer for incoming grain and four for outgoing. Four vessels can be loaded at once, and a full-sized ship is only detained three hours in getting its cargo. The peculiar advantage of rubber is in the exposure to the weather, and it can be seen that elevators are good customers for the rubber-man. Over fifty miles of rubber belting are in use in elevators in New York harbor in the grain trade.

* * *

THE use of hard rubber for paper-cutters has been suggested by many in the trade, but the idea has never been put to practical use. Much cheaper than ivory, the perfect material for a paper-cutter, and better than bone, its use would soon make it a favorite.

BRIEF ABSTRACTS OF RECENT RUBBER PATENTS.

AMONG recent patents issued by the United States Patent Office, embodying applications of India-rubber or Gutta-percha to a greater or less extent have been the following. It is not practicable here to do more than to note the use of rubber in each case, with sufficient detail to enable those who are interested to decide whether or not to look into any particular patent more fully:

TIRES.

No. 496,321.—Mandrel for Pneumatic Tires. Fred. W. Morgan and Rufus Wright, Chicago, Ill.

A circular mandrel for the purpose set forth having a removable section whereby a tubular seamless tire sheath can be formed upon the mandrel and then removed therefrom.

No. 496,336.—Pneumatic Tire. William S. Callaghan, Baltimore, Md., assignor of one-half to Charles T. Holloway, same place.

In a pneumatic tire, the combination of an inner elastic tube; an outer elastic tube, and an impenetrable, non-elastic cover inclosing the inner elastic tube, and having a split extending in a peripherical direction entirely around it on that side adjacent the metallic rim of the wheel, one edge only of the split being cemented or otherwise secured to one of the elastic tubes; the rest of the cover being unattached and loose.

No. 496,359.—Means for Repairing Cycle-Tires. Frank M. Hamman, Goshen, Ind., assignor to the Ariel Cycle Manufacturing Co., same place.

A plug for repairing tires, comprising a conical point, tapering up to an annular groove in the body of the plug, having a wedge shape, and a head arranged to seat flush with the outer surface of the tire, the plug being of such a length that when in place its point is substantially entirely through the tread of the tire, within the interior thereof, while the groove is centrally within the thickness of the tread.

No. 496,361.—Elastic Tire. Andrew Hunter, Chicago, Ill., assignor of one-half to John W. Ward, Pottsville, Iowa.

A tire for vehicle-wheels comprising a tube of elastic material, and a continuous spirally coiled spring of a less diameter in cross section than the bore or opening of the tube and extending throughout the length of the tube, said spirally coiled spring being arranged to bear outwardly against the outer wall of the tube and to leave a continuous open space adjacent to the inner wall of said tube.

No. 496,418.—Vehicle-Tire. Woodburn Langmuir, Toronto, Canada.

As an improved tire, a metal band bolted or otherwise secured to and substantially in the center of the felly, a rubber ring having a groove made in its interior circumference to fit over the metal band and projecting on each side of the groove to fit into recesses made in the circumference of the felly.

No. 496,527.—Self-Heating Pneumatic Tire. James R. Morris, Passaic, N. J., assignor to the New York Belting and Packing Co., Limited, of England.

A pneumatic tire composed of the following elements: An inner layer of vulcanized rubber, a layer of unvulcanized rubber, plies of sheeting separated to form a recess upon the tread portion of the tire, unvulcanized rubber within said recess, and a layer of vulcanized India-rubber.

No. 495,974.—Pneumatic Tire. Rudolph W. Huss, Chicago, Ill., assignor to Henry A. Lozier, trustee, Cleveland, Ohio.

A pneumatic tire comprising an outer tubular cover, an inner tubular layer of reinforcing fabric having its longitudinal or warp threads omitted along the tread portion of the tire, and an air tube arranged within such tubular reinforcing fabric.

No 495,975.—Pneumatic Tire. Rudolph W. Huss, Chicago, Ill., assignor to Henry A. Lozier, trustee for the Cleveland (Ohio) Tire Co.

A pneumatic tire having its tread reinforced by cross-threads or thread portions which are separable from one another to permit the tread to have an elastic longitudinal yield or stretch, and having its sides reinforced against longitudinal stretch.

No. 496,982.—Wheel for Velocipedes. Edouard Michelin, Clermont-Ferrand, France, assignor to Michelin & Co., same place.

In a wheel-tire, the combination of a felly having channels or grooves, a tube constituting an air chamber outside of said felly, a flange protecting band of flexible material covering said tube and having its flanged edges within the channels or grooves of the felly, and a metal fastening band applied within said channels or grooves outside of the flanges of the said protecting band and provided at each end with a hooked lateral projection engaging in a notch in the felly and overlapping the exterior of the felly.

No. 496,528.—Self-Healing Pneumatic Tire. James R. Morris, Passaic, N. J., assignor to the New York Belting and Packing Co., Limited, of England.

A pneumatic cyle-tire composed of the following elements: An inner layer of unvulcanized India-rubber coated on its inside with a coating of loosely woven fabric, a layer of vulcanized India-rubber, two or more plies of cloth, and a layer of vulcanized India-rubber.

No. 496,571.—Pneumatic Tire. Georges V. G. Lapsolu, Paris, France.

An air-chamber for the tires of wheels for velocipedes or other vehicles constituted substantially as herein described by a strip of supple elastic material rolled or coiled up in helical form with its edges lapping to form a tube whose walls are composed at all points of several thicknesses of material, one of the edges only and an adjacent portion of the width of the

strip being adherent to the underlying portions and the other edge and the adjacent portion of the width being inadherent and free.

No. 496,642.—Pneumatic Tire. Frank Douglas, Chicago, Ill.

In bicycle-tires, the combination of an inner tube, an outer casing slitted longitudinally to permit insertion and removal of the inner tube and provided with longitudinal lugs molded integral therewith to receive a wheel rim, and an outer strip extending from the outer edges of the lugs across the portion to be included in the rim and forming when cemented a continuous tube.

No. 496,671.—Wheel-Tire. Frederick G. Taylor, Cranston, R. I.

An elastic wheel-tire having a central tubular portion, longitudinal securing-lips, and an outer metallic-tread.

No. 496,789.—Pneumatic Tire. F. W. Morgan and Rufus Wright, Chicago, Ill

A hollow or pneumatic tire comprising an endless, seamless, tubular sheath formed with an inner tubular layer of canvas and an outer tubular layer of rubber molded and vulcanized as described and inclosing a removable air-tube, the sheath being opened to a limited extent so as to provide a limited split or opening for the introduction and withdrawal of the air-tube without materially impairing the integrity of the sheath as a seamless tubular structure, and being further characterized by compression and vulcanization on the mandrel.

No. 496,909.—Cover for Pneumatic Tires. Orey D. Shank, Cincinnati, Ohio.

A removable cover for pneumatic tires consisting of the base strip, having its longitudinal edges notched, a strap having chamfered edges secured centrally on said base, buckles secured upon on end of the base on opposite sides of the straps, straps to engage said buckles secured upon the opposite end to draw the meeting edges together, and fastenings upon the longitudinal edges of the base strip to secure the cover around the tire and rim of the wheel.

No. 496,949.—Flexible Tire. Alfred Normanton and Herbert Normanton, Manchester, England.

A shield or protector in the form of a covering, constructed of a succession of narrow pads of leather or other non-penetrable substance, secured to the inside of a strip or band of canvas or like material, having an India-rubber wearing surface, the convergent edges of said pads being slightly apart when the shield or protector is placed out flat, in order that said pads may not overlap each other when placed around the tire, and may have a perfectly level surface for placing over and around any perfectly finished and completed pneumatic or other elastic tire.

No. 497,453.—Pneumatic Tire. Edouard Michelin, Clermont-Ferrand, France, assignor to Michelin & Co., same place.

The combination of a felly having at its sides throats or gutters, an annular air-chamber, a flexible protective tire external to said chamber and having on its edges flanges which project laterally outward and are received within the bottoms of said throats or gutters, but which only fill a portion of the depth of said throats or gutters, and hoops or rings applied within said throats or gutters directly against the outer walls thereof outside of the outer circumference of the said flanges.

No. 497,575.—Pneumatic Tire. Leopold Holt, London, England.

The combination, with a circumferentially-grooved rim, of a tire-cover provided with edges adapted to engage with the said grooved rim, an inflatable air-tube for extending the cover, and a fastening device consisting of an inflatable tube formed separate from the said cover and air-tube and operating to lock the edges of the cover in position when expanded

BOOTS AND SHOES.

No. 497,527.—Method of Making Boots or Shoes. Benjamin A. Pickering, Woonsocket, R. I., assignor of two-thirds to John Shambow and Parker J. Buxton, same place.

An improvement in the art of manufacturing water-proof boots, consisting first in steaming a leather insole to expel the oil and grease therefrom, then subjecting the insole to a moderate degree of heat so as to thoroughly dry the same, then connecting the piece of leather and a series of layers or soles of felt and canvas together and to a rubber vamp, the vamp lining and the foot and leg lining of the boot by rubber cement, and then vulcanizing the whole. The subject of this patent is more fully described on another page of this journal.

MECHANICAL RUBBER GOODS.

No. 496,363.—Hose-Coupling. William Kreider, New Orleans, La., assignor of one-third to Charles Carroll, same place.

In a hose-coupling, the combination of the socket-piece having a nipple to receive one hose section and a laterally opening socket; a head-piece provided with a head adapted to enter and turn in the socket to interlock therewith, an internal sleeve longitudinally movable within the head-piece, and having front and rear flanges for retaining it therein and a nipple for receiving the other hose section; and the nut threaded over the rear end of the head piece and having the internal flange engaging behind the rear flange on the sleeve and thereby adapted to project the head beyond the head-piece.

CLOTHING.

No. 496,978.—Process of Producing Ornamental India rubber Waterproof Fabrics. Goodman C. Mandlerberg, Manchester, England.

In the manufacture of waterproof fabrics, the herein described process of ornamentating the proofed face of such fabrics, which consists in proofing a wide fabric on the wrong side, cutting the proofed fabric into strips or ribbons and forming an ornamental design upon the proofed face of the water-proofed by applying the strips and causing the same to adhere to the said proofed face.

SADDLERY GOODS.

No. 497,502.—Horse-Collar. William Sellers, Haverhill, assignor of one-half to Herbert E. Wales, Bradford, Mass.

An inflatable horse-collar, both wales of which are formed of air-tight material and having an air passage forming a communication therebetween, and a valve in the fore wale directly opposite the passage between the two wales and communicating therewith.

NOTIONS.

No. 496,313.—Corset Stay. Julius Janowitz, New York city.

As an improved article of manufacture, a stay consisting of a steel core having a coating of hard rubber and cushions of soft rubber on its ends united by vulcanization.

MISCELLANEOUS.

No. 483,274.—Pipe for the Conveyance of Liquids or Gases. Edwin Walker and Joseph Shaw, Heckmondale, England.

A compound pipe consisting of an inner core-pipe of ductile material, an external pipe of rigid metal, and a tubular cushion of India-rubber interposed between the said two pipes.

No. 489,927.—Paper Tube. Philip Cary, Cincinnati, Ohio.

A tube composed of a layer of waterproof paper, covered with a layer of asbestos treated with soluble glass.

No. 492,420.—Sheet-Packing. Thompson McGowan, Cleveland, Ohio.

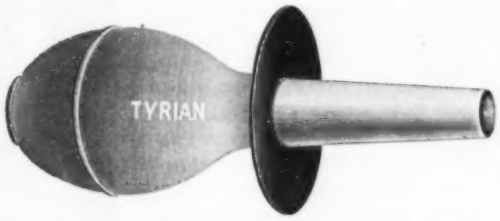
A packing impervious to such liquids as oil and sulphuric acid, the same comprising a disk or sheet of paper, cloth, or equivalent absorbent material saturated with a substance obtained by saturating glycerine with a basic oxid that will chemically unite with the glycerine.

No. 496,686.—Diving-Armor. Arthur Heminger, Algonac, Mich.

In a diving-armor, the combination with a middle section or shell, of chest and collar sections detachably secured together, a flexible section interposed between the middle and chest sections, flexible legs and arms secured to the middle and chest sections respectively, and flexible bands connecting the coils of said legs and arms.

NEW GOODS AND SPECIALTIES.

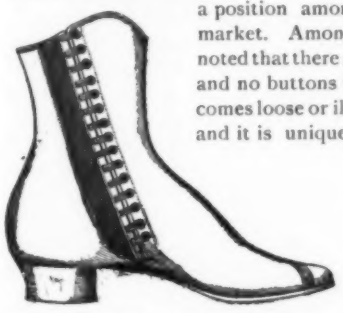
THE various goods manufactured by the Tyer Rubber Co., in the druggist's-sundries line, are growing in popularity every day. It has been their custom for the past few years to bring out some special new goods for this trade every season. The latest this season is the article shown in



the accompanying illustration, which is so simple that it needs no description. It is made of one piece of soft rubber of an especially good, white compound. It is fitted with removable hard-rubber shield, and has no valves or connections to get out of order. Manufactured by the Tyer Rubber Co., Andover, Mass.

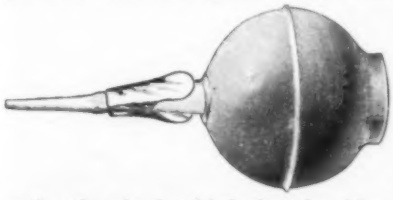
THE NORTON CLASP SHOE.

THE new style of shoe illustrated herewith, though it has been on the market for a short time comparatively, has met with such favor among the ladies that it seems destined to take a position among the best sellers on the market. Among its advantages it may be noted that there are no shoestrings to break, and no buttons to come off. It never becomes loose or ill-fitting around the ankles, and it is unique among shoes in that it allows for the natural expansion of the foot. The clasp arrangement is more quickly arranged than either button or laced shoes. The shoe is made with oval heels, which prevent contact with ladies' wearing apparel and the consequent danger of accidents. In the manufacture of the shoe the objectionable seam is almost entirely obliterated. The manufacturers invite correspondence with a view to giving the exclusive agency for this shoe to one live retailer in every city. Their address is the Norton Clasp Shoe Co., No. 37 Spring street, Lynn, Mass.



THE "KI-YI" OR DOG-EXTERMINATOR.

A VERY neat appliance that the bicyclist will appreciate is shown in the accompanying illustration. It is simply a rubber bulb fitted with a nozzle upon which is placed a spring valve. The bulb is filled with diluted *aqua ammonia*. It is designed as a protection against dogs that have a habit of chasing bicyclists and often times upsetting the wheel and bringing the rider to the dust. A few drops of the solution, however, squirted from the bulb teaches the canine a lesson that he does not soon forget. Manufactured by A. U. Betts & Co., Toledo, Ohio.



NEW YORK OR INVERNESS MACKINTOSH.

A LADY'S garment that is a popular seller this season is that shown in the accompanying illustration. It is designed especially to be worn over the fashionable puffed sleeves, and is therefore sleeveless and fitted with a 26-inch cape. The garment may be either lined or unlined, and is made in both single and double texture goods. The cape is lined with silk if desired. This is made up in any style of goods, from the cheapest to the costliest. Manufactured by the Norfolk Rubber Co., Chauncy street, Boston, Mass.

NO. 4 ECLIPSE LAWN-SPRINKLER.

A NEW lawn-sprinkler that is meeting with a very ready sale is the "No. 4 Eclipse." The new feature in this lawn-sprinkler and one that makes it entirely different from others by the same inventor are the bottom runners, which allow it to be easily drawn over large gardens or lots. It overcomes the necessity of turning water off or on, as it can be easily drawn in any direction by pulling a cord. The machine is made in the most workmanlike manner, the top swivel and arms being entirely of brass, and the standpipe is of ⅜-inch iron, painted red. The bottom plate, which is attached to the runners, is iron, painted green and bronzed. The runners are cast-iron and japanned. Manufactured by John C. Kupferle, St. Louis, Mo.

A RUBBER AND ELK-SKIN BOWLING-SHOE.

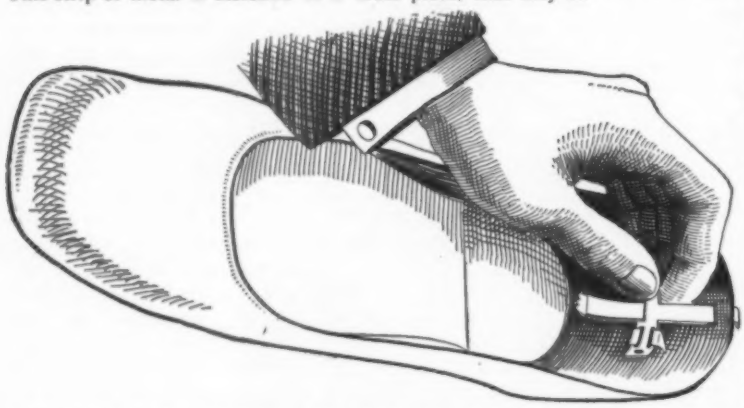
VARIOUS shoes have been brought out for use in bowling, but it has remained for Boston men to solve the problem of perfection. In the shoe shown in the accompanying illustration, a combination is effected whereby the bowler is so equipped that one foot is prevented absolutely from slipping, while the other gets just the necessary slide as the ball leaves the hand. This is accomplished by having the right shoe shod with a rubber sole, which is well cemented and stitched on. The outer sole of the left shoe is elk-skin, tough and durable, allowing the foot to slide without slipping. The upper of the shoe is made of the best Kangaroo stock, unlined to prevent heating the feet, and is a little lower cut than an ordinary lace shoe, so they will not cut or bind the ankles. It is hand-sewed, with a thin leather sole and spring heel. Manufactured by F. P. Webster, No. 277 Washington street, Boston, Mass.

THE "MONARCH" HEEL-PROTECTOR.

IT is well known that if the heel of a rubber boot or arctic is worn unevenly it brings such a strain on the other parts that they very soon give out. A very neat and inexpensive contrivance to overcome this trouble is what is known as the "Monarch" heel-protector. This is simply a triangular skeleton metal embodied in the heel, allowing three wearing points to appear above the wearing surface. The wear comes on these and prevents the heel from running over and twisting, and increases the life of the shoe about one third. The protectors are vulcanized into the heel and there is no possibility of their working loose or dropping out until the heel is worn out. Manufactured by F. W. Whitcher & Co., No. 4 High street, Boston.

ACME OVERSHOE-FASTENER.

WHAT is considered by many as the best and cheapest method of keeping the overshoe from slipping at the heel is shown in the accompanying illustration. It consists of a strip of metal which runs inside of the counter to the heel of the shoe, terminating in three points, which are bent outwardly. This strip of metal is fastened to a cross piece, that may be vulcanized into the counter, so that the fastener is held tight. The foot, when it is placed in the shoe, slips easily past the projecting points, but when the overshoe attempts to drop loose at the heel it is held firmly in position. A small top strap at the upper end of the fastener allows it easily to be released and is also of use in pulling the overshoe on the foot. Manufactured by the Acme Overshoe Fastener Co., Peoria, Ill.



THE "BOSS" WASHER.

A WASHER that is being sold very largely to the trade at the present time is one that bears the name of the "Boss" washer. It is made especially to stand hot water as well as cold, and is said to be extremely durable. Manufactured by the Boss Washer Co., 7 Alling street, Newark, N. J.

"MACKINTOSH" BOTTLE-WASHER AND TESTER.

SOMETHING that will interest druggists'-sundries men is shown in the accompanying illustration. It is called one of the most simple and most practical bottle-washers ever invented. It has no complicated parts to get out of order, as it is made of but one piece and is attachable to any screw water-cock in use. By screwing the washer on a regular water-cock a very small force only is necessary to thoroughly cleanse both the inside and outside of the dirtiest bottle. It is said that with this one can wash bottles three times faster than by the old method. It is not necessary to wash out straw or dirt, as the water when once turned on, forces any foreign material out instantly. As a bottle-tester it is a decided success and bottles with cracks or flaws are broken at once. The washer may be left on the water-cock as it can be used as if it were an ordinary faucet. Manufactured by the Mackintosh Co., Erie, Pa.

THE "PERFECTION" STEAM FLUE-CLEANER.

SOME kind of flue-cleaner is absolutely essential in every boiler room. Of all the styles in use the "Steam" cleaner is perhaps the best, and that because it is simple in its action and convenient to the fireman. If he is lazy he is more likely to use it thoroughly than if he had to use the old-fashioned hand cleaner. The "Perfection" is said to be particularly easy to operate. In use, the right-hand holds the cleaner, while the left operates the handle on the steam-cock, giving the operator complete control of the force of the steam to be applied. It is light in weight, easy of attachment to steam supply. The nozzle fits perfectly to the flue and forces the dry steam the entire length, cleaning it perfectly. It is by all odds the leading flue-cleaner now on the market. Manufactured by Hardwick & Himrod, Erie, Pa.

STANWOOD INSULATED ELECTRIC-CAR STEP.

STANWOOD Insulated Car-Steps are well known to street-railway men, as they are in use on almost all of the large lines. A new invention of the company is a steel car-step that is protected with rubber insulation, which prevents all danger of the electric current coming into contact with the steel, of which the step is made, during wet weather. There are quite a number of the car companies who have adopted these steps, and they are highly recommended by them. Manufactured by Stanwood Manufacturing Co., Chicago, Ill.

BRITT'S AUTOMATIC SAFETY-BIT.

A BIT that can be utilized to stop any horse, no matter how vicious, is shown in the accompanying illustrations. The principle upon which it works is so simple and so practical that it is a wonder that it was not invented long before. As ordinarily used it is like the bit commonly seen in any harness. If, however, the horse gets beyond control, by a slight additional pull

on the reins two rubbercovered pads are brought down so that they close the creature's nostrils. At the same time, the bit makes a half turn in the mouth, opening it slightly so that his breath is not shut off too suddenly. As a matter of fact, no creature can run for any great distance without breath, and when the horse learns that his viciousness results in the closing of his breathing apparatus he very quickly becomes tractable and kind. The pulling does not act on the bit itself, lacerating the mouth, but works outside of the bit. The pressure on the rubber pads can be regulated so nicely that the instant the horse begins to show signs of capitulation it can be lessened and no harm done. This bit has already been widely introduced and letters have been sent to the inventor from all over the world, describing incident after incident where vicious and unmanageable horses have become gentle as kittens. Manufactured by Dr. L. P. Britt, No. 37 College place, New York.

A WHITE RUBBER RESPIRATOR.

WHAT is known as a respirator or smoke-protector is shown in the accompanying illustration. For firemen's use it enables the person to enter the densest smoke and ascertain the location of the fire and thereby partly solve the problem as to where the water is to be applied in such a way as to extinguish it. It is also used in factories where there is dust or injurious gases, as the air for breathing is drawn through a wet sponge and exhaled through a valve at the side, removing every particle of dust before entering the lungs. The respirator is made of the best white rubber and will last for years. Rubber-manufacturers are using these to some extent in rooms where French chalk and turpentine are used and a variety of other manufacturers use them in various departments. Manufactured by the Rhode Island Coupling and Rubber Co., Providence, R. I.

TWO NEW TYPES OF "MARVEL" SHOE.

THE "Marvel" shoe, without doubt, has come to stay. This is proved not alone by the ability and push that is now put into its manufacture and sale, but as well by the favorable attention it attracting. Two new styles have been put upon the market this month and are well shown in the accompanying illustrations. They are the "Opera" and the "Common Sense." To those not already acquainted with the special points of the "Marvel" it may be well to say that the Marvel is unique in that it is a molded rubber shoe, unlined, and it is made heel, sole, and upper, of first quality rubber. It is made to suit a trade that calls for the best and is willing to pay for it. It is always a clean shoe, for with no stockinet lining to get worn and soiled, it may be washed outside and in, and will remain clean, smooth, and whole as long as the most economical would wish. As it is molded on a metal last, instead of the ordinary wooden one, the sizes never vary, a feature that all will appreciate in getting fitted. Manufactured by Marvel Rubber Co., Woonsocket, R. I.

OPERA.

COMMON SENSE.

MINOR MENTION.

A UNIQUE postage-stamp holder is being given away by the American Rubber Co. It consists of the usual oiled sheets in the middle of a book which comprises the holder, on the inside cover of which is a list of the stores of the company throughout the country, and on the outside is a superscription as if addressed to the American Rubber Co., Boston, Mass., with a mock postmark and canceled stamp. The whole affair cost very little money, but it represents an idea which indicates the employment of brain work. On the reverse of the little book it is stated prominently that the American company are the largest manufacturers of mackintoshes and rubber clothing in the United States.

—One of the neatest articles of rubber manufacture that has ever been shown is a product of the Marvel Rubber Co. A dainty shape in ladies' rubbers is molded from pure rubber, no fabric being used except for a sole lining. The heel is also fashioned to receive the prevailing style of shoe heel worn in ladies' street wear. While more expensive than other styles, it is claimed they are twice as durable. The style and elegance, combined with perfect glove-like fitting, will insure their instantaneous popularity.

—The American Rubber Co. have added to their line of cloaks, the triple cape, so much worn of late on ordinary garments. These capes are fully lined with silk, and the cost is not out of proportion to that of other styles. They also have added the "Butterfly" cape to their stock, which is also fully lined with silk.

GOLD COAST RUBBER EXPORTS.

A PAPER was read recently before the Liverpool Chamber of Commerce by Mr. Hesketh J. Bell on the trade aud resources of the Gold Coast colony. Great progress has been made of late in this colony, in shipping and otherwise. The first export of India-rubber was in 1883. In 1889 the exports of rubber amounted to 550 tons. In 1890 the shipments of rubber reached 1500 tons, valued in the colony at £231,000. The Gold Coast is shown by these figures to rank third among the rubber-producing countries of the world. Owing to the unreasoning greed of the natives of the interior, however, in rashly cutting down the trees to gather the gum, Mr. Bell feels that the industry will not be permanently profitable.

IT has always been a mystery to the uninitiated why worsted garments are superior to woolens. Woolen goods are made from material from any part of the sheep's fleece, while worsted goods are made exclusively of certain parts of the fleece. The fine, long, and brilliant fibers of the fleece are mechanically separated from the short curly ones by machinery.

RUBBER-MEN ON THE TARIFF.

NO little public attention has been directed to the proposed tariff bill of the Reform Club (New York) on account of the eminence of the individuals composing its Tariff Reform committee, and because of the supposed harmony of views existing between these gentlemen and the administration at Washington. The proposed tariff schedule is prefaced by a memorandum of general principles, in which is set forth that manufacturers "are not entitled to protection against natural foreign competition"; that crude materials to be used in the process of manufacture should be free of duty; that all duties should be strictly *ad valorem*; and the general inference is justified that the operation of the proposed bill is intended to lead to the increased importation of manufactured goods, so that an ample amount of revenue would be afforded at a smaller rate of duties than now exists.

In lieu of the existing duties on different items of rubber manufacture, the new bill provides for a duty of 15 per cent. on all manufactures of India-rubber and Gutta-percha. In a table of estimates accompanying the proposed bill these figures appear:

	Under existing law.	Under proposed law.
Value of imports in one year	$448,279	$600,000
Rate of duty (*ad valorem* or equivalent)	30.94%	15%
Duties collected	$138,679	$90,000

In a letter to THE INDIA RUBBER WORLD the Hon. L. D. Apsley, president of the Apsley Rubber Co. and member of Congress from the Fourth Massachusetts district, writes in response to a request for his views on the proposed tariff legislation:

By reason of the work done by me when the last tariff law was enacted, the trade and the public generally are quite familiar with my views on this subject.

As a member of the Fifty-third Congress, it will give me pleasure to have an expression from all the trade, of their views and opinions, as to what effect such a radical change as a uniform duty of 15 per cent. would have upon the so-called mackintosh rubber business.

Putting a duty on crude rubber can benefit no one, and is, in my judgment, absurd.

* * *

THESE views are expressed by the president of one of the largest mechanical-rubber manufacturing companies:

"The reduction of the duties on mechanical rubber goods would not make any difference in the extent of our trade. We now send our manufactures to Australia, and certainly no protective duty helps us in that respect. That we can make better goods than other countries is one reason for this, and I have an idea that we can make them as cheaply as any other country. Now if we should reduce our tariff to 15 per cent., as suggested by the 'Reform Club' bill, we should have that leeway. It would cost 5 per cent. for the foreigner to get his wares over here, and if we cannot beat him on those lines, I should say that simple justice to the masses in this country would be to allow them to trade with the foreigner and let us retire.

"A duty on crude rubber would be too great a swing of the pendulum, and would not do at all. We want to take off duties—not put them on. I know the legacy left us by the outgoing administration is a hummer, indeed. When I read about a soldier obtaining a pension because he had a couple of corns on his feet, I wonder where we are at, but I think we shall soon see our way to reduce these expenses, and shall not need so many taxes. I don't wish to abuse any one, but when I think of two men who with others went down to Washington to legislate us all rich, and who did not know enough to take care of their own petty business affairs, I feel truly thankful that we are financially as well off as we are. We have had a narrow escape from national peril and I think the two Ohio men will be left hereafter where they will not have a chance to do harm.

"The business interests of the country are in fairly good hands, and will come out all right if bankrupt aspirants for the presidency are not allowed to make any more high-tariff laws. The world has written us up as the biggest jays of the time; now let us come down to common sense, and in my own line, with free rubber, free cotton, as much of everything else that can—in view of the need of revenue—be made free, and, if you will, free manufactured mechanical goods, we can plant our goods under the nose of the shrewdest foreign maker alive. We are not babes; we are men with the best country in the world back of us, but we are unfortunate once in a while, in striking the softest set of law-makers that a generous nation ever provided with bread and butter, and the sooner we get less careless in that respect the more quickly we will reap the harvest we ought to have."

* * *

THE clothing-men do not seem much interested in any new tariff bill. The fact is that matters have turned out quite differently from what they expected with the last. In the first place they had a rate on textiles put in the McKinley bill which gave the importer a serious handicap at the start. The profits, however, as they appeared to be on paper, were so alluring that every man who could raise a few thousand dollars embarked in the business, and the competition became in a short time astonishing. Then the importers found a bar down in the McKinley tariff bill and in they came with cloths of which "rubber was the chief component of value." Now all hands are fighting for the trade, native and foreigner, the former taking the lead on quality, style, and finish, and the latter making a raid with something new and cheap as often as he can.

The weather has simply boiled all hands out, but that is too fickle to be depended upon further. They do not care to discuss a new tariff for several reasons. First, outside of the implication of the late election, they have no lines they say on which to follow a discussion. They say it makes much difference as to what the tariff will be on silk, and what it will be on wool. Upon the basis of 25

per cent. ad valorem on woolen goods, 15 per cent. for silk, and 15 per cent. for rubber manufactures, they fear it would be hard sledding; either wages would have to come down or the mills would be closed.

* * *

IN the hard-rubber trade there is little said about the tariff. Charles A. Hoyt, treasurer of the India Rubber Comb Co., said: "We would not care if the tariff was abolished altogether if we could get labor for the same prices that they do abroad. We pay in our factory in Germany for unskilled labor sixteen to eighteen marks per week. The latter sum is equivalent to $4.32 in American money. In our factory at College Point, L. I., we pay $10 and $12 per week. There are many grades of skilled labor and the comparison is not so readily made, but we surely pay twice as much for that in this country as we do there. In this item is the difference in the cost of goods. The workman there works somewhat longer hours than here. As to the cost of living, if he lived as well there as our workmen do the single advantage would be in the cost of rent. It is cheaper there than here. Naturally such labor is not so desirable as that we have here, and we should dislike to see the change, looking at it in a broad point of view, for years to come. For the immediate future it would not make any difference for us to employ such labor here. If the tariff should be reduced labor would have to accommodate itself to the new order of things, or we would have to work at a loss or close down our factory here. As business men the alternative chosen by us would be the latter. Naturally labor would succumb; it could not live without employment."

* * *

R. A. LOEWENTHAL, of Loewenthal & Morganstern (New York): "The whole tariff policy in its broad sense is short-sighted, and if it could be abolished, particularly the duties on raw materials, it would be better for our export trade and in turn for our manufacturers. We can now export a great many kinds of goods, but upon a very narrow margin, because under our system our manufacturer pays so much more for the raw material he uses, and in this he comes in competition with the foreign makers who are not taxed in that manner. There is a fear often expressed that the workman will suffer if we reduce the tariff. I believe that the purchasing value of his dollar earned will increase and he will in that way really have an advance in wages. The German laborer does not seem to be able to compete with the American when all things are equal. An enterprising German manufacturer I know took a great fancy to the way in which we made shoes in this country, and reasoned that with the cheap labor in his own country he could beat the whole world. So he sent his son over here to learn the business and the young man lived in Lynn and other places and thoroughly absorbed every idea we have in shoe-making. Then his father built a mill and equipped it with machinery of the most approved pattern. But he reckoned without the labor question. The quick, nimble, well-fed American was wanting, and in his stead was the vegetarian German, slow, dull, and without endurance. He could not turn out shoes enough to make the investment profitable, and at last reluctantly yielded to the inevitable and abandoned the enterprise.

"Our labor needs no nursing; it is strong enough, but I think a high tariff is more of a handicap in this sense than a nurse. We have taxed our shipping interest out of existence. The party which has just gone out of power thought they deserved the thanks of the whole nation when they by hook and crook got two steamships to bear our flag; but they merited nothing save rebuke for carrying out a policy which takes millions away from us every year to other nations to perform for us a business which has always been considered by political economists and statesmen the first for which to strive. It looks now as though we were to return to some reason in this matter."

* * *

"SPEAKING of the proposed new tariff," said an officer of the Mattson Rubber Co. (New York), "It would make no difference to us if the duty on manufactured goods was abolished absolutely. We send our dress-shields all over the world, and when one can do that, the efficacy of a tariff has entirely passed away. Should they put a tariff on crude rubber that would be quite another thing. We would have to advance prices accordingly and our foreign trade would be perhaps handicapped. But from whom does the authority come for such statement? If the late election is to be interpreted that raw materials are to be taxed, then some of us have not judged of it very accurately."

RUBBER GOODS FOR CAMPING OUTFITS.

WHOEVER contemplates a camping trip should study the rubber store and the goods in it before purchasing an equipment. The great point in buying some of the articles shown in the rubber stores is that one can take so much, and it will occupy so little space during the process of getting to places.

To enumerate there is the canoe-bed, which can be blown up at night and collapsed at other times. It is an emblem of ease and comfort, and some have a surface of 52 by 80 inches, others being as small as 20 by 50 inches. One can spend $10 for the latter or $40 for the former. Rubber bath-tubs are quite a common article now, many travelers using them in country hotels where the convenience of a tub is often necessary. The upright portion can be blown up so as to make them rigid, and thus have a substantial form. They are made only in an oval or in a round shape, some of them being as large as 34 inches diameter, and costing as high as $14. An air-cushion is not out of place in the country, as it will furnish a seat in stony or in damp places. They are in all shapes and at prices from $4 down.

Air-pillows with embossed cloth covering become almost indispensable as one looks at them. A little one 9 by 13

inches costs $1.75, while the largest is worth, say $3.25. Then the rubber-man has inspired the idea that boat-seats should be cushioned in the same manner. So he has rigged up an article with four longitudinal air-chambers, the whole being strapped to a seat by three long straps that meet and fasten underneath. For this you open your wallet and count out only $3.50.

Should a life-preserver be desired you can satisfy yourself as to any peculiar needs. They are made so long as 41 inches, quite enough in capacity to float a whole family, and with shoulder- and body-straps it is quite impossible to get feet up and head down in attempting to use them. Some stockinet swimming-collars are useful to those who have not entire confidence in themselves.

A good rubber blanket is indispensable. These are plain, or they can be had lined with Canton flannel, 78 by 78 inches being the largest, for the price of $4. A shawl-bag made of mackintosh cloth is a convenient article. It covers the shawl and keeps it dry when it is being carried from place to place in the usual strap.

The "poncho," for horseback riding, is well known. They are now made better than ever before, coming in black or white rubber, and are on sheeting or in check cloth.

In tumblers there are those of soft rubber, as well as in hard, telescopic and otherwise.

It is not necessary here to describe tennis-shoes, or the varieties in sporting boots, which are numerously sufficient for a separate article. Gun-covers are in great variety, chiefly, however, of black or of mackintosh rubber.

Rubber hats are useful anywhere, in city or country; they have cemented seams, and do not look peculiar if the sun should surprise the wearer. There are cartridge-bags also, for the old Puritan who told his son about to meet the enemy to "trust in the Lord and keep your powder dry" is remembered in practice now by the hunter. Shooting-jackets with pockets, fishing-jackets, hunting-leggings, yachting-caps, recoil pads, tobacco-pouches, horse-covers, etc., are among the conveniences which the rubber-man has devised for that great portion of our population who once each year take their vacation away from the luxurious metropolis.

Camp life in rainy weather is as miserable as it is delightful on pleasant days, and rubber goods make such weather more tolerable. Then space which in transportation is everything is nearly annihilated by the rubber articles, and in these two important qualities it will be a long time before this useful material is superseded in the field mentioned.

THE PRESIDENT OF THE NATIONAL RUBBER COMPANY.

ONE of the prominent figures in the rubber business in the United States to-day is Colonel Samuel P. Colt, president of the National India Rubber Co., and legal director of the United States Rubber Co., whose residence is at Providence, R. I. Colonel Colt's experience as a manufacturer of rubber goods dates back but a few years, nor does he claim any technical knowledge concerning the manipulation of gums or compounds. In a financial sense, however, he is fully at home in the management, not only of rubber concerns but of others equally important. Although a New England man in thought, ability, and enterprise, his place of birth was Paterson, New Jersey, the date of his advent being January 10, 1852. It will be seen from the comparative nearness of this event that he is one of the youngest of the successful rubber-men.

The boyhood and youth of the subject of this sketch were passed in Hartford, Connecticut. As the nephew and namesake of the famous Colonel Samuel Colt, the inventor of Colt's revolvers, and furthermore as the favorite of that estimable gentleman, he early had his eyes opened to the importance of industrial pursuits and showed marked ability in that direction. A natural result was that, when old enough he became a pupil in the Massachusetts Institute of Technology in Boston, from which excellent school he graduated with honors in the well-known class of 1873. Then followed a year of travel and study in Europe preparatory to his entrance in the Columbia Law School. In 1875 he graduated with distinction and the following year hung out his shingle in Providence, where he soon had a lucrative practice.

Mr. Colt's ability was recognized from the start and during the first year of his residence in the center of Rhode Island's culture and wealth he was elected a member of the General Assembly, in which position he served for three years. The following three years he ably filled the office of Assistant Attorney-General, and from 1882 to 1886 was Attorney-General for the State of his adoption. During the last named year he formed the Industrial Trust Co., one of the most successful financial institutions in New England, of which company he was elected president. He still holds that position and the organization has grown so rapidly that it now does the second largest banking business in Rhode Island, and has a capital of $750,000.

It was not until 1887 that Colonel Colt became, strictly speaking, a rubber-man. Before that time, although he had done considerable business in a financial and legal sense with large rubber corporations, he had not held a property interest in any factory. When, however, the National India Rubber Co., with its great and expensive plant at Bristol, was found to be in difficulties, he was sought as one who would be able to put it again upon a paying basis. It was a great undertaking and the times were not of the best, and many men among his friends and well-wishers predicted failure. The result, however, was most gratifying. For five years Colonel Colt has financed and managed the new National company. During the whole of that time regular dividends have been paid, the capital largely increased, and a goodly surplus has been accumulated. Appreciating fully the opportunity presented to the rubber world when the United States Rub-

COLONEL SAMUEL P. COLT,

PRESIDENT NATIONAL INDIA-RUBBER COMPANY.

ber Co. was projected, he was one of the first to throw his influence in favor of the plan of consolidation.

Personally the Colonel is an exceedingly pleasant man to meet. He is very popular socially, and in business has the rare faculty of combining unvarying courtesy with commercial dispatch, attributes that have won for him hosts of friends.

SOME USES OF UNVULCANIZED RUBBER.

THERE are used in the leather-shoe trade annually many thousands of barrels of rubber cement, which is, of course, unvulcanized rubber in solution. A number of manufactories are run particularly on this sort of work, and their output to a large degree is sold directly to the leather-shoe manufacturers. The process is a simple one, Pará rubber being used and benzine being the solvent. In order to get the finest, lightest, and cleanest cement possible, the outer skins of the hams of Pará are taken off, and the inner part, after being stripped and separated into as many parts as possible, is soaked in benzine until it is very much softened and has increased its bulk about four times. This is then put in a large churn, run by power, and a little resin is added to increase the sticking qualities. It is then stirred for a number of hours, more benzine being added from time to time until a homogeneous mass is obtained, after which it is barreled and sent to the shoe factories. A small outlet for this sort of cement is found among photographers for sticking purposes, to whom it is sold after having been very much thinned by the addition of more solvent. For repairing purposes a cement is used to which has been added a little lampblack and a certain quantity of litharge for the purpose of drying after it has been applied. Another form in which unvulcanized gum is sold is that of various packings that are to go in places heated by steam, where the gum, after being put into place, is slowly vulcanized and has a certain life added to it by having missed the first process of vulcanization.

What is known as cut sheet is used largely in this country and abroad. It is nothing more or less than pure gum which has been massed upon a mixing mill and afterward put into a rectangular iron box and pressed into a solid cake. This box is fitted with a traveling arrangement something like that of a planer, so that the cake of rubber can be slowly fed out of one end against a small revolving knife, which cuts it into the thinnest possible sheets. These sheets are used in making balloons, tobacco-pouches and articles of that kind. It requires no little skill to make these goods from unvulcanized rubber. To make a perfect sphere, it is a matter of common knowledge among balloon-makers that no number of pieces less than seven can be used. The pattern-cutters may use nine, 11, 13, or 15 pieces, always going on the odd number, as it is claimed that a balloon made of eight, 10, or 12 pieces would not expand evenly.

Goods made of cut sheet are usually cured by the cold process or by the vapor cure, and in some cases are used without any vulcanization at all. Formerly India-rubber thread was made of gum treated in much the same manner as the cut sheet, and a great deal of skill was attained in its manipulation. These threads were made so fine that from 7000 to 8000 yards of one kind would weigh only one pound. They were used not only in suspender webs and goring, but in Jacquard looms in place of webs, in some looms as many as 3000 of these threads being used. —*Invention* (*London*).

PUMICE STONE IN RUBBER COMPOUNDS.

IT is generally known that quite a quantity of pumice stone is used to-day in the rubber trade. To be sure it is not used in druggists' sundries as it used to be when powdered pumice and sand were mixed and put into the tumbling barrels, to finish the goods. It is, however, used in various kinds of erasive rubber to give the necessary rough surface, but aside from this the use is very small. One superintendent claims to use a certain amount of it in compounding hard valves. He believes that he gets a certain texture from its use that no other adulterant will give him, and as the goods are cured hard and polished there is no danger of scratching. It is possible he is right in this; certain it is that his valves sell, and he seems satisfied with the result secured.

It is always well for a rubber-man in using anything to understand pretty thoroughly what it is. If one, however, were to tell a manufacturer that a piece of pumice is really of the same nature and composition as a piece of granite, he would hardly credit it. It is, however, true. Both are eruptive rocks; analysis gives both nearly the same proportions of silica, lime, alumina, soda, potash, and iron oxids. The only difference between them is in their physical conditions. They differ exactly as the foam on the glass of beer differs from the beer itself.

Eruptive rocks when forced by volcanic agencies either come up in great dome-shaped masses or in thin sheets between over-lying rocks, or flow out as lava. It will thus be seen that there will be a variety of ways for these masses to cool. The dome-shaped portion never reaching the surface cools very slowly and gradually, and the chemical affinities have full opportunity to work; the elements, therefore, enter into the various combinations known as quartz, mica, feldspar, etc., and the rock when cold is a crystalline aggregate of this,—in other words, a granite. The thin sheets cool too rapidly for complete crystalization, and form the quartz porphyries and rhyolites; or if they cool too quickly for crystalization at all they form clear glassy forms known as obsidian.

Pumice is a very vesicular obsidian; in other words, it is full of blisters, due to the expansion of the moisture contained in it. It differs from the regular obsidian as a light well-raised biscuit differs from unleavened bread. The cavities in the pumice are simply bubbles of steam separated from one another by thin walls of glass, and it is the broken particles of the sharp, thin wall separated by the cavities that gives the stone its cutting power.

The best pumice in the world comes from a volcanic island in the Mediterranean. This stone is exceedingly fine and uniform, and better than the California stone.

SOME RUBBER EXHIBITS AT THE WORLD'S FAIR.

By Homer Michaels.

CHICAGO, June 6, 1893.—In the handsome little World's Fair souvenir book, entitled "From Forest to Foot," issued by the Boston Rubber Shoe Co., it is said: "If Charles Goodyear were alive to-day he could discover nothing connected with his invention in which so great an improvement has been made as in the manufacture of rubber shoes of the best quality. In shape, durability, and comfort there is no comparison between those experimented on by him and those which are now shipped to every city, town and village in the United States and to all parts of the world." Not only would Goodyear be surprised at the improvement made in rubber shoes, but he would gaze in wonder at the many, and then unheard-of, uses to which rubber has been adapted.

By looking up the rubber exhibits at the Fair, made by the different manufacturers, a person who is interested in that branch of industry will be able to make a very comprehensive study of the history of its growth. There is hardly a building upon the entire Exposition grounds in which rubber in some practicable form is not to be found. Rubber exhibits of different character can be seen in the Manufactures, Electricity, Transportation, Fisheries, and Leather and Shoe Trades buildings, and Machinery Hall, and among the many and varied displays to be seen which come from every part of the world, that of India-rubber is one of the most interesting.

Beginning with the rubber trees, which are to be found in the Horticulture building and which could be tapped for the sap which they contain, one would not be obliged to go outside of the Exposition grounds to procure a "machete" with which to do the tapping, or to find the "calabash" in which to collect the milk. Neither would it require a very extended search to obtain the smoke-pot, palm nuts, or smoker's paddle which are used in transforming the crude fluid into a suitable condition to begin its interesting journey from the native forests to the feet of the whole civilized world. All these articles are to be seen in the rubber-goods manufacturers' exhibit just as they are used by the natives along the Amazon river.

The huge rubber "biscuit," just as it is cut from the smoker's paddle, looks very different from the material contained in the latest style of rubber shoe, which is as soft and pliable as a glove. There is also to be seen the crude rubber ground and mixed with foreign substances and called by other names, and uncouth shoes that were made by the Indians three- or four-score years ago, as well as those made by the white man fifty years ago. A pair of shoes that belonged to the old Indian chief, Omcubojas, having on them the imprint of the leaf of the rubber tree, is also to be seen.

When the Leather and Shoe Trades Association talked of taking charge of the leather and shoe exhibits and placing them in a building in charge of that business genius and prince of good fellows, Clinton Collier, the rubber-shoe companies came to the front and subscribed $16,000 towards helping along the project. Some of the exhibits in this building which are now not quite in order will be entirely completed by the time this article is in print. The exhibits in the Machinery Hall, the Manufactures and Liberal Arts, Electricity, and Transportation buildings are complete in almost all instances, but little work being still required to put the finishing touches and make the India-rubber exhibits complete. Visitors at the Exposition will then be able to see what a wonderful article rubber is and to realize the importance and magnitude of the rubber industry.

In the Fisheries building the pumps and connecting pipes used in pumping the salt water into the aquariums is made by the Goodyear Hard Rubber Co., as the hard rubber used is the only substance that is unaffected by the action of the salt water the use of which is practicable. The Rattan Wheel Chair Co., which charges the visitors 75 cents per hour to be pushed around the grounds in one of their rubber-tired chairs, are furnished with another article of rubber in the shape of lap-robes for use in case of sudden showers of either rain or dust. In the Electricity building, the miles of copper wire which furnish the wonders in electricity and transform the great building into a veritable fairy-land of colored lights and incredible wonders, would have been an utter impossibility without rubber as an insulating material.

In the Transportation building, where are to be seen the fine four-in-hand coaches, as well as the light carriage for "milady," the rubber tire appears on every hand. Among the bicycles,—and there are enough of them to be seen in this building,—the rubber tires, pedals, handles, etc., make a large exhibit in themselves. The passenger coaches also come in for their share of attention when one is on the lookout for rubber goods. On the stairs and in the aisles rubber mattings are laid; in fact, rubber can be found in nearly every hole and corner of the Fair. And yet it has been only a comparatively few years since the use of rubber was, like electricity, unknown. The Fair could hardly be more complete, from the standpoint of the rubber-man, without a building made entirely of rubber, and your correspondent suggests that at the next World's Fair such a one to be erected. Some public-spirited citizen might cause to be erected a rubber monument showing off a native rubber-gatherer, with smoke-pot and paddle, offering his product to Charles Goodyear.

The Boston Rubber Shoe Co. were among the first to have their display ready. Their goods were installed in a very attractive oak and white booth in the Leather and Shoe Trades building, on the shore of Lake Michigan, some time before the opening of the Exposition, on May 1. Their exhibit is to be found in section F, No. 10, and consists of over 600 different styles of rubber boots, shoes, and sandals of every description, together with many very

instructive curios from the Amazon country connected with the discovery of rubber. In one of the show-cases, inclosed in a glass case in the day-time and in a safe at night, is "Bessie's head," as it is called by the company, the only one of the kind in the United States. The head is that of a native negro woman sap-gatherer which has been dried and mummified by a lost art. All the bones have been removed and the skin shrunken to one third its natural size, but, strange to say, the features retain their form and the skin is not wrinkled. A rubber sap-gatherer's outfit is also shown, as well as shoes made by the natives a hundred years ago, and sandals made by white men in 1844. Patterns, shoes in the course of construction, rubber ready for the cutter, a rubber biscuit, and columns of crude rubber are also shown. In a case by themselves are to be seen samples of all sorts of heavy rubber boots and shoes used by lumbermen. The entire exhibit is very complete and reflects great credit on the manufacturers.

The display of the Woonsocket Rubber Co. can be found in Section D, No. 22, of the Leather and Shoe Trades building. The booth is one of the finest in the building and their display as large and expensive as any on the Exposition grounds. The booth itself is a succession of gold and copper arches in the corners and in the center of which appear the names, "Baltimore," "Boston," "Providence," "Woonsocket," New York," and "Chicago," in raised gold letters upon a black shield. A fountain of water plays in the center of the booth, and the walls are tastefully decorated with clusters of South American Indian spears, many of them with poisoned tips. These and other instruments of Indian warfare tend to attract the crowds. In cherry and beveled-glass show-cases, both large and small, can be found more styles, shapes, and sizes in rubber shoes, sandals and boots, both for the male and female foot, than the ordinary individual ever supposed could exist in the trade. The display of rubber boots for men's wear is exceptionally fine and large. The beautiful light-weight sandals, the heavy high- and low cut rubbers can also be found, as well as several new shapes in ladies' and misses' sandals never before seen in the Chicago market.

The Goodyear's Metallic Rubber-Shoe Co. [Wales Goodyear] of Naugatuck, Conn., have constructed a very pretty blue booth in Section C. No. 13, of the Leather and Shoe Trades building, and have shipped their goods to that place and ordered them packed up around their booth.

The Waterbury Rubber Co., of New York, have the only exhibit of its character on the grounds—that is, a display of steel-armored hose. It can be seen in Section A, No. 40, Machinery Hall annex, and consists of a pyramid twenty feet high by thirity feet at the base, made of every size and character of steel armored hose manufactured by the company.

The Goodsell Packing Co., of Chicago, have arranged a very neat and interesting exhibit in section G, No. 33, Machinery Hall, and make quite an extensive display of their packing in all its forms; also of the material that goes into its construction.

The W. R. Brixey Manufacturing Co., of New York, have a very fine display of Kerite in the gallery of the Electricity building. It consisty of aërial and deep-sea insulated wires and cables; also wires of every size covered with Kerite, crude Pará rubber before it is made into Kerite and a large pyramid of this compound, which looks and feels very much like the crude rubber. Samples of Kerite tape are also to be seen.

W. H. Salisbury & Co., Chicago agents for the Boston Belting Co., have spread themselves in Section 15, No. 27, Machinery Hall in their display for the above company. This exhibit includes samples of every practicable use to which this class of rubber goods can be put. Their collection of belting and hose is extensive as well as being admirably selected, and is shown off to the best possible advantage by the smaller articles in the exhibit. This company can well claim to be one of the largest manufacturers of mechanical rubber goods in the world, if their display counts for anything.

Among the many exhibits of different classes of rubber goods shown at the Fair, perhaps the one that could most truthfully be called a rubber booth and exhibit, is that shown by the New York Belting and Packing Co. (Limited). Their display is composed entirely of rubber, and it would be difficult to find any wood used in the construction of the booth. The railings are made of rubber, the entrances and gates are of air-brake hose, and the lower part of the railing is latticed with bicycle pedals. The display of curios is extensive and instructive. Among them are rubber shoes made by the natives, photographs showing them at work and rubber playthings made by the natives for their children. One immense Pará rubber bottle weighing 600 pounds stands in the center of the booth. There are also a section of an immense rubber belt, sulky-tires, bicycle-tires, footballs, rubber bottles, vulcanite emery-wheels, and many other articles made by the company. Although the booth is very large a person cannot help wondering how they were able to show off the many goods to such good advantage without placing some of the articles out of sight. This interesting exhibit is located in Section H, No. 26, Machinery Hall.

Sharp, Smith & Co., of Chicago, make a very pretty display in Section E, Nos. 101–102, gallery of the Manufactures building. Along one side of their surgical-instrument booth is a twenty-foot show case containing elastic bandages and stockings in every shade of the rainbow. In the center of the booth is a machine in operation showing the method of knitting these stockings.

C. Müller, of Berlin, exhibits a large case of surgical instruments made of hard rubber, in the gallery of the Electricity building. Manier, of Paris, also has a very fine display of Gutta-percha on the main floor of the same building.

The Common Sense Truss Co., Section D, Nos. 101–102, gallery of Manufactures building, make a neat display of elastic good and bandages, as do Charles Truax, Green & Co., Section E, Nos. 101–102, manufacturers of surgical instruments and elastic bandages.

The India Rubber Comb Co. and the Goodyear Hard Rubber Co. (New York) have two exhibits in the gallery

of the Manufactures building, one of which consists only of the products of the comb company. It occupies Nos. 90–92, Section F, and is shown in standing- and wall-cases filled with brushes and combs of every description, as well as all kinds of toilet articles that are made from hard rubber, arranged in a most creditable manner. The other exhibit is located in Section G, No. 79, on the other side of the gallery, and consists of goods made under the patents of both companies. It is made up of hard-rubber tubing, a large pump,—the same as used in the fish exhibit to pump the salt water,—oil cans and plates, ten-pin balls, surgical instruments, flasks, buttons, and a hundred other appliances.

The Stoughton Rubber Co. of Boston, for whom W. H. Salisbury, of Chicago, is agent, have their display in a very large show-case twenty feet square, in Section G, No. 81, gallery of Manufactures building. This case is filled with a beautiful assortment of high-grade mackintoshes. This display is much finer in quality of goods shown than that of a large English firm, who have a similar exhibit in the British section. By comparing these two exhibits it is easy to see that American manufacturers have made wonderful strides in the production of mackintoshes.

The Elastic Tip Co., of Boston, show a large stock of their goods, including a big gun, ten feet long and six feet high at the breach. Its muzzle overlooks the main floor, and a person standing there and looking up would easily suppose that another Krupp's exhibit could be seen by climbing the stairs. The display is of great interest to the children and is situated in Section G, No. 81, in the gallery of the Manufactures building.

The American Rubber Co., of Boston, have arranged for two exhibits, one in Section G, No. 75, in the gallery of Manufactures building, which consists of a large booth filled with wire dummies upon which it is their intention to display mackintoshes, but no covering has been placed over them as yet. The other exhibit is found completed in Section C, No. 14, Leather and Shoe Trades building, and is made up of a large assortment of finely-finished ladies' and gentlemen's rubber shoes and sandals in both natural and fancy colors. Their samples of tan-colored sandals attract considerable attention. The extra finish which this company always give to their goods is also one of the very noticeable features of the exhibit.

A. J. Tower, of Boston, manufacturer of waterproof clothing, occupies in Section G, No. 71, gallery of the Manufactures building. It is the only display of "slickers," oil-clothing, and horse-covers to be found in the gallery of this building. The display is complete in all details and shows the perfection which has been attained by the manufacturers.

C. J. Bailey & Co., of Boston, make a very fine and complete display in rubber novelties. Their show-cases contain all sorts of brushes and small toilet articles, besides numerous other things, and are placed in the gallery of the Manufactures building, Section G, No. 71. As it is one of the first rubber exhibits one comes to after climbing the stairs on the east side of the building it attracts no little attention.

England has sent over a very creditable exhibit of rubber goods to the British section situated on the main floor of the Manufactures building, Section D, No. 41 to 43. Anderson, Anderson & Anderson of London are the manufacturers and are making the exhibit. Though it was only a few years ago that they excelled us in the production of many of the goods shown, now it is impossible for the writer to find a single instance in which the goods exhibited are equal to the same line of goods made by American manufacturers, and to be seen among the American exhibits. It is probably true that no single American manufacturer has such a varied assortment of fancy sporting goods and useless rubber articles among their displays as are here shown, but should any one care to order them they can be found on their lists, if not in the show-cases at the Fair. A fine display of mackintoshes made in the large, heavy English checks, is also to be found in the exhibit, and which look out of place alongside of our own high-grade American garments of the same name.

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A RUBBER-MAN'S IMPRESSION OF THE FAIR.

CHARLES J. BAILEY, the Boston rubber-man, upon his return from a visit to the World's Columbian Exposition, gave his impression of the great fair to the Boston *Traveller* to this effect:

"I spent three weeks at Chicago, and failed to see any of the alleged mismanagement, particularly in the cafés and restaurants, about which I have heard so much in Boston. The proprietors of these restaurants are under bonds to furnish good meals at a specified price. One of the largest companies, having a café in every building on the ground, has a bill of fare equal in price and quality to any that can be found in Boston. The service is good, and a hungry man can go in there and get a good square meal for from forty to seventy-five cents. An order of roast beef of the best quality and generous in quantity, including potatoes and all the bread and butter you can eat, costs but forty cents. Good milk costs five cents a glass, and other things are in proportion. At the numerous lunch-counters throughout the buildings and grounds, there are sandwiches, tea and coffee, and other articles at reasonable prices. The trouble probably originated in a French restaurant connected with the exhibit in the French building, which opened on the first of May, with a very high scale of charges. This lasted but two days, however, when president Higinbotham gave notice that the restaurant must either conform to the schedule of prices or close their business. Fountains of good drinking water free to visitors have been erected in many parts of the grounds. I can truly say that the sight of this immense fair is a credit to all the officers connected with it, and every precaution is taken to protect visitors from extortionate charges.

"The Fair itself is beyond all description. It is surely the grandest thing that has ever been placed before human eyes, and no man, woman, or child who can get money enough to visit it should fail to see it. As one gentleman told me, who had traveled all over the world,

'A person can see more of the world by going right to Chicago and seeing the World's Fair than he could by visiting all the different countries.'

"How are the exhibitors treated?" was asked.

"Everything is done that can be done to further the exhibitor's interest and every man is treated as a gentleman. I can safely say that it would take six months for a visitor to see the entire Fair, as every building represents a different portion of the world. I think that a person could spend days in looking at acres of the finest paintings in the world. The arts and sciences, floriculture, horticulture, agriculture, and mechanics are represented here in the best that can be introduced.

"I recommend that every American visit this aggregation of the world's people and the world's productions. It is worth two years of one's life, and might truly be called a great educator."

A RUBBER COMPANY'S $2,500,000 MORTGAGE.

THE newspapers have briefly reported the filing, in New Jersey, Ohio and elsewhere, of a mortgage by the Mechanical Rubber Co. to John P. Townsend and John S. Tilney, trustees, amounting to $2,500,000. The Mechanical Rubber Co., incorporated last year under the laws of New Jersey, with an authorized capitalization of $15,000,000, has for the purpose of its business, purchased certain real and personal property, fully described in the mortgage. To enable the company to complete the payment of the purchase price of said property, and for other purposes of its business, it has been resolved by the board of directors to mortgage the whole of the property of the company, to secure an issue of 5000 first-mortgage 6-per-cent. twenty-five-year gold bonds, each of the par value of $500, bearing semi-annual interest coupons. Additional security is guaranteed the bondholders by a sinking fund to be established and maintained, as provided in the mortgage. The property covered by the mortgage is as follows:

I. Six pieces of real estate in the city of Cleveland, Ohio, acquired from the Cleveland Rubber Co. and aggregating about eleven acres, subject to certain rights of way granted to railroads.

II. The premises of the Chicago Rubber Co., in the city of Chicago, embracing 4.15 acres, also subject to certain railroad rights of way.

III. All machinery and generally all other property whatever, contained in and about the factories and premises above referred to.

IV. Shares of stock and debenture bonds of the New York Belting and Packing Co., Limited, as follows:

21,372 shares of 8% non-cumulative preferred capital stock, the total authorized issue being 22,500 shares of the par value of £10 each.

19,196 shares of common capital stock, the total authorized issue being 20,000 shares of the par value of £10 each.

1,000 founders' shares (the total authorized issue) of the par value of £1 each.

232 six-per-cent. debenture bonds, of the par value of £100 each, part of a total issue of 2250 of such debentures, all of which are alike secured by the company's first mortgage to the Knickerbocker Trust Co., as trustee, dated February 9, 1891.

There is also embraced in the $2,500,000 mortgage all additional shares of stock of the New York Belting and Packing Co., and additional debentures of the series above mentioned, which may hereafter be acquired by the Mechanical Rubber Co., and also all the property, real and personal, hereafter acquired by the mortgagor, by means of bonds or proceeds of bonds of the issue hereby intended to be secured.

In regard to the issue of the 5000 first-mortgage bonds, it is provided that 1532 bonds ($766,000 par value) shall be certified and delivered to the company forthwith to enable it to complete the payment of the purchase price of certain of the property mortgaged hereby; that 2018 bonds ($1,009,000 par value) shall be delivered hereafter only in exchange for the additional first-mortgage 6-per-cent. debentures of the New York Belting and Packing Co., of the series above mentioned, the rate of exchange to be one $500 bond for £100 in debentures; that the remaining 1450 bonds (par value $725,000) shall be issued only for additional real property hereafter purchased by the Mechanical Rubber Co., (the value of which shall not be less than the par of the bonds issued in payment therefor) or at not less than par for cash. All such proceeds shall be invested in real property.

It is specified that all bonds are to be certified by the Knickerbocker Trust Co., of New York, and delivered by the trustees to the rubber company—or other corporation or person designated by it to receive the same—only upon the written application of the company, expressed through a resolution of the board of directors, stating the number of bonds required and the intended disposition. Further provisions in the mortgage relate to the creation of a sinking fund, and to the powers and duties of the trustees, and to the mutual protection of the company and the bondholders under given conditions. The mortgage is signed in the corporate name of the Mechanical Rubber Co. by its president, John H. Cheever, and attested by its secretary, John D. Cheever. It is signed also by the trustees, John P. Townsend and John S. Tilney.

MILLVILLE EXPECTS A BOOM.

THE people of Millville, Mass., have been made very enthusiastic by the connection of the Woonsocket and allied rubber companies with the United States Rubber Co., on account of the prospect which they think it opens for the enlargement of the local factories built up by Mr. Banigan. Thus it is thought that the Lawrence Felting Co. will enlarge its plant to double the present capacity, with a view to supplying linings for the product of all the factories in the big combination. The Woonsocket *Call* states that plans have been drawn for the erection of new vulcanizing works of sufficient capacity to give employment to 150 people. There are rumors also of large additions to the Millville rubber-shoe factory and, by the way, also to the Alice mill, at Woonsocket. On account of the excellent water privilege at Millville, controlled by Mr. Banigan, it is thought possible that a cotton-mill will be erected there for the manufacture of the millions of yards of cotton cloth used annually by the factories of the United States Rubber Co. If other materials can be more cheaply manufactured in a plant owned and controlled by the company, why not cotton? Such are the questions which the people of Millville are asking.

RECENT CUSTOMS DECISIONS.

BY a recent decision of the Board of General Appraisers at New York, elastic webbing composed of India-rubber and cotton is dutiable at 40 per cent. under Paragraph 354, whether the rubber in it is the component of chief value or not.

The importers of Cravenette, to which reference was made in the May number of THE INDIA RUBBER WORLD, have appealed from the decision of the Board of General Appraisers to the United States courts. The importers claim that Cravenette is waterproof and entitled to the lower rate of duty as such, which the Board have denied.

THE RUBBER TRADE WITH AUSTRALIA.

OF late the trade in mechanical goods with Australia has fallen off, and in some quarters the assertion has been made and gained ground that German houses have secured the trade. In a financial sense it must be admitted that Germany, France and Great Britain are better equipped for all foreign trade than the United States. All exchanges center in London and the system of credits that it has in common with other European banking centers is well tried and farther extended than with the United States. In fact, our merchants know so little about the peoples in those countries that they are apt to extend no credit at all to them, and this of itself is an embargo of the first class in endeavoring to deal with them. On the contrary, the English and the Germans generally have a representative on the ground and he naturally is in a position to judge of the extent of the credit that can be given. Just now Australia is in a bad way financially, and cannot afford to buy many goods of any description. The decline in the export of rubber goods is no greater in comparison, than in other lines, if as much. Some rubber houses say that they see no reduction in their sales for Australian account.

The point can be made, however, that we are constantly shipping rubber goods to Germany and satisfying their people better in their own markets than they can themselves. We ought, therefore, to be able to hold our own in Australia.

TRADE AND PERSONAL NOTES.

THERE was held in New York city on May 24, a meeting of stockholders of the Union Rubber Works Co., which corporation was formed under the laws of West Virginia on January 10 last, under a charter authorizing a capitalization of $1,000,000. At the meeting referred to the following directors were chosen, all being residents of New York: Isacc N. Heidelberg (of Bierman, Heidelberg & Co., clothing); Royal M. Bassett (president St. John Cylinder Packing Co.); Joseph C. Hatie (president Mutual Fire Insurance Co.); William H. Blain (attorney-at-law); and R. A. Loewenthal (of Loewenthal & Morganstern). Subsequently the directors met and elected Mr. Bassett president, Mr. Blain secretary, and Mr. Loewenthal treasurer.

—The Brown Shoe Co., of St. Louis, formerly Brown-Desnoyers Shoe Co., make prominent in their advertisements the claim that they were the first house in their city to organize a rubber department and build up a trade on best-quality goods.

—The Cincinnati Rubber Co. have filed articles in the County Clerk's office at Newark, N. J., with a capital of $25,000. The incorporators are Edward W. Hull, of Cleveland, O.; Charles T. Hull, of Cincinnati; Willis A. Darling, of Boston; and Lloyd McKim Garrison, of Orange, N. J.

—The Rubber-Step Co. (Exeter, N. H.) report the receipt of a large order for their goods from Moscow, Russia. The Pullman Palace Car Co. recently gave them an order for 1200 steps.

—Chadbourne & Moore, of Boston, it is stated, are establishing a manufactory for shoe-gorings at Manchester, N. H.

—The Graham Rubber-Stamp Works, at Graham, Va., have procured an outfit for making rubber stamps and are establishing a factory.

—The Easthampton (Mass.) Rubber Thread Co. are, it is stated, putting in five new vulcanizers, in addition to a fire-pump having a capacity of 800 gallons per minute and new hydrants in the mill-yards, connected with the town water-mains. They will thus be well equipped for protection against fire.

—The sign "Trenton Rubber Works" on the stack of the company at its manufactory is one of peculiar prominence. Signs of this character are frequent as a matter of course, but in this case it is made up of single letters the entire length of the stack, and as the works are in close proximity to the railroad, isolated from other concerns, it is all the more striking.

—The warerooms of the boot and shoe people on Reade street do not look so empty as they did a month ago, when not a case of goods could be found in them. The "storm slipper" seems to be chief among goods in stock.

—The Nott & Plant Rubber Co., for the sale of rubber goods, at Minneapolis, Minn., have been incorporated, with a capital stock of $50,000.

—The mechanic reigns supreme in the New York offices of the United States Rubber Co. and the officials are resigned to the usual delays so peculiar to the class to which he belongs. At present it looks anything else than the offices of a business corporation about which so much is said.

—Among the articles of incorporation filed with the Secretary of State at Springfield, Illinois, May 25, were those of E. P. Jaquith & Co., at Chicago, with a capital stock of $100,000, to deal in boots, shoes and rubber goods. The incorporators were Edwin P. Jaquith, George S. Cole, and Lynden A. Seymour.

—One of the largest mill-supply houses in the west is that of the Queen City Supply Co., of Cincinnati, the firm name being Puchta, Pund & Co. The members of the firm were originally with the old-time house of Post & Co. The latter have relinquished the supply business to the new firm who are imposingly located on the corner of Elm and Pearl streets. Among the companies represented by this firm are the Boston Belting Co. and the Magnolia Anti-Friction Metal Co.

—In all lines of rubber goods used in the sporting trade, the Meacham Arms Co. and Rauling Brothers of St. Louis laid in a full stock during the winter. They bought so much that they can now, with the advance in hip boots, etc., control, with one or two others, the retail trade of that section.

—The warerooms of the Atlas Rubber Co. (New York) have been remodeled with pleasing results.

—The Standard Thermometer Co. (Peabody, Mass.) have a large exhibit at the World's Fair, in charge of T. W. Shepherd.

—The Berlin Iron Bridge Co. (East Berlin, Conn.) have received contracts for the new rolling-mill building of the New Haven (Conn.) Rolling Mill Co. and the new power-station of the Atlantic Improvement Co., Long Island City, N. Y.

—The Gleason & Bailey Manufacturing Co. (Seneca Falls, N. Y.) have secured contracts for an improved hook and ladder truck for Eaton, Ohio; a hook and ladder truck for Gowanda, N. Y.; an improved hose carriage for Sayre, Pa.; a hand hose carriage for Tonawanda, N. Y.; two horse hose carriages for Newport, R. I.; an improved two-horse hose wagon for North Attleboro, Mass.; a hose carriage for Summit, N. J.; a steel frame hook and ladder truck for Florence, S. C.; two hook and ladder trucks and three hose wagons for the fire department of New York city; and a patrol wagon for the Board of Fire Underwriters of New York.

—Charles T. Wood & Co., dealers in general rubber supplies, Boston, removed on June 1 from No. 67 Chauncy street to No. 197 Tremont street, near Boylston, under the Hotel Pelham.

—H. P. Emerson, proprietor of the Emerson Rubber Works, Reading (Mass.) is on a flying business trip in the West.

—C. E. Mitchell, general-manager of the Fossil Flour Co., has established a drying-plant in Nova Scotia near the large deposits of infusorial earth owned by this company, and expects by fall to have a large quantity ready for market.

—A salesman for the "ruberoid" manufactured by the Standard Paint Co. (New York), has lately been visiting the rubber-manufacturers in New England with excellent success.

—H. A. Yatman, of the Essex Rubber Co. (Newark, N. J.), has developed several new specialties in rubber, which will soon be placed upon the market. The Essex company, by-the-by, are exceedingly busy, which fact is largely due to Mr. Yatman's energy and knowledge of the business.

—A. O. Donaghue has accepted a position with the Emerson Rubber Works, and has general charge of the making up of the mackintoshes. He is turning out some excellent goods which are finding a ready sale.

—Mr. J. J. Voorhees, of the New Jersey Car Spring and Rubber Co., has secured some of the finest cabinet-size photographs of rubber implements that have been seen in this country and is sending them out to his customers as an advertisement.

—Charles D. Waters, of Trenton, has accepted a position with the Commonwealth Rubber Co. (New York) and is to be found at No. 54 Vesey street, attending to the financial end of the business.

—The Boston Woven Hose and Rubber Co. have opened a branch in St. Louis. Their store is situated at No. 943 North Second street, in the heart of the wholesale district. They do a strictly jobbing business, which is under the management of Mr. Charles H. Till. They also send out a number of travelers from this store to secure the trade from the south and southwest.

—The Western Linoleum Co. (Akron, Ohio) report that last year they manufactured $600,000 worth of light weight goods, and that this year they expect to market $750,000 worth.

—The cruiser *New York*, which is attracting so much attention by its beauty and speed, was furnished with speed indicators manufactured by the Standard Thermometer Co., Peabody, Mass.

—The Worcester (Mass.) Consolidated Street Railway Co. have placed the contract for the new car-house with the Berlin Iron Bridge Co., of East Berlin, Conn. The new building will be 95 feet in width and 290 feet in length, entirely of brick and iron.

—The Watertown (N. Y.) Air-Brake Co. are fitting up 1100 cars of the New York Central railroad with the equipment required under the new federal law.

—The Standard Rubber Corporation (Brockton, Mass.) have just completed their new smokestack, and some alterations in their plant, and have contracted for another 100-horse-power boiler, which will be completed probably early in July. They started work in full blast on June 12, after a shutdown of only about ten days. They report a large number of orders on hand, and prospects very good for an unusually good season's business, May having been the best month of the present year.

—Lester Leland, of New York, has resigned from the board of management of the Metropolitan Telephone Co., and goes to Boston as assistant treasurer of the Boston Rubber Shoe Co., in place of C. C. Converse, who lately resigned from that office.

—Charles T. Wood & Co.'s New England agency for the Cleveland Rubber Works, in Boston, has adopted an admirable advertising device in the shape of a price-list of goods, on the leaves of which have been pasted samples of a variety of styles and qualities of materials for rubber garments for ladies and gentlemen. The management of the agency invite correspondence in regard to prices and samples.

—The large order for treads and matting for the Reading Terminal at Philadelphia was secured by Latta & Mulconroy, of that city.

—The Colchester Rubber Co. have built adjoining their office a fire-proof vault for the storage of books and papers.

—The box coat is an assured "go" and is meeting with much success with that portion of the trade that is dealing in the higher-priced mackintoshes.

—B. F. Pennington, treasurer of the Standard Rubber Corporation, returned home on June 2 from a very successful business trip to a number of large cities, including Chicago, where he visited the World's Fair. He reports prospects very flatter-for the "Standard" mackintoshes this fall.

—The Pond Rubber Co. (Boston), of which E. L. Pond is manager, have a large line of rubber goods which are sold through canvassing agents only. They adopted this system six years ago, and have found it successful. It is claimed that the different textures, colors, and styles in which ladies' waterproof garments are made are so varied that it is impossible for even large stores to keep them all in stock. The Pond company, therefore, are represented by agents who carry sample-books and take orders for goods to be made up. They have sent out a new catalogue of rubber clothing, including miscellaneous rubber goods which they are also prepared to supply.

—Bentley & Olmstead, of Des Moines, Iowa, are said to rank fourth in the sale of the Candee Rubber Co.'s goods in the United States.

—The Standard Rubber Corporation (Brockton, Mass.) have put in five Singer I. M. C. B. machines for work on clothing. The Empire Rubber Co. (Trenton, N. J.) have put in one Singer No. 5 two-needle, two-shuttle machine for work on belting. The Sanders Duck and Rubber Co. (St. Louis, Mo.) have put in four Singer I. M. C. B. B. F. machines.

—In a recent number of THE INDIA RUBBER WORLD it was stated that Pusinelli, Prusse & Co. were the only parties handling Mangabeira rubber. This is an error, for the shipments of that grade of rubber are large. The misinformation arose from the fact that the firm in question shipped a small lot of new rubber for experimental purposes to New York, and named it Mangabeira, without any particular reason therefor. As the rubber did not prove to be what was expected of it, further shipments ceased.

—The Lowell (Mass.) Rubber Co. have brought out a full line of wrapping paper for rubber stores that is having a ready sale. The paper is a light brown and has printed upon it pictures of a variety of articles in common use, such as mackintoshes, hot water bottles, syringes, etc., together with lists of goods kept in stock by the store using it. This many times serves as a very efficient reminder to customers and often results in considerable purchases.

—A small consignment of asbestos came up early this month on the steamer *Adirondack* from Kingston, Jamaica. The consignment, which is very unusual in this market, was forwarded to London.

—A good-sized book, handsomely gotten up, is entitled, "Detroit of To-day, the City of the Strait," and devoted to the commerce and manufacturers of that important center of population. One of its pages relates to the firm of Henry Werner & Co., wholesale dealers in India-rubber goods at No. 266 Gratiot avenue. An engraving is given of their business house, and the history of the business transacted there. The firm are agents for the oldest and most trustworthy rubber-shoe houses, besides which they sell garden-hose, tubing, druggists' sundries, footballs, rubber toys, rubber gloves, and everything in the rubber-goods trade.

—The decline in the demand for rubber surface coats is so great that some of the mills are only making one-tenth of what they made in these goods two years ago. The general popularity of the mackintosch, however, is on the increase, and the demand, even at this time of the year, is a surprise to the most sanguine believer in the continued success of the double-texture garment. The outlook is that the rubber-clothing business is drifting fast into the hands of the general rubber-goods dealer, as the line of mackintoshes is too much of a fine study for the wholesale dry-goods and notion trade.

—The Secretary of the Treasury advertises that sealed proposals will be received at his department until 2 P. M. Thursday, June 22, for supplying hose racks and four-ply rubber-hose, and seamless, unlined linen hose of the best quality, with the necessary fixtures, to all buildings under the control of the Treasury east of the Rocky Mountains, from to time as the requirements of the service may demand, during the fiscal year ending June 30, 1894. Instructions to bidders will be furnished upon application. Bids should be accompanied by samples of the hose and swinging racks upon which the proposals are based. The right to reject any and all bids, and to waive defects, is reserved by the department. Proposals should be addressed to the Secretary of the Treasury, and endorsed "Proposals for Hose."

TRADE PUBLICATIONS.

A TASTEFULLY-DESIGNED cover directs attention favorably to the "Catalogue and Price-List of Rubber Boots and Shoes Manufactured by L. Candee & Co., New Haven, Conn.," for the season of 1893-94. It is contained in a convenient-sized book of 72 pages, printed on paper of a delicate tint, and showing engravings of the leading styles of the goods described.

—The Commonwealth Rubber Co. (No. 54 Vesey street, New York) have issued a revised price-list of their water-, garden-, and steam-hose, and rubber and leather belting, printed in a convenient form on a folder,

—The 1893 catalogue of the Marlboro (Mass.) Rubber Co. contains an extensive list of bicycles for sale by them, from leading manufacturers, and in addition a large line of bicycle supplies, fishing-tackle, baseball goods, and other goods in which rubber forms a part.

—Rubber-manufacturers will find useful a little book entitled "A Ready Reference for Engineers and Steam-Users," by James B. Stanwood, member of the American Society of Civil Engineers and director of the Cincinnati Technical School. This collection of data is the partial result of seventeen years experience by the writer in steam-engineering, and contains in convenient form many tables of steam-pressures and other information designed to aid steam-users in securing the most economical performance of engines of different types. It is published in Cincinnati, but comes to this office with the compliments of Parker, Field & Mitchell, of Cambridgeport, Mass.

—The Woonsocket Rubber Co. maintain their artistic style in advertising publications in their 1893 catalogue and price-list, the cover of which is ornamented with views of the Woonsocket Rubber Co. and the buildings of the World's Fair. Inside are illustrations in detail of the mills of this company and of some scenes illustrating the uses of their rubber goods, followed by cuts of a liberal selection from their list of products. In an introductory paragraph "To Our Friends, the Trade," the manufacturers say: "The demand for these goods taxes our many factories to their uttermost capacity and is conclusive evidence of the appreciation by the trade and a wearing public of their beauty, durability, and unexcelled quality. The Woonsocket Rubber Co. intends at the future to maintain its long established reputation as manufacturers of the best quality of goods known in the markets of the world." The concluding page of this handsomely-lithographed catalogue contains this practical advice to the trade:

"To secure the best results with rubber shoes they must properly fit the leather shoes over which they are worn. If the rubber is a little short, or the heel or sole a little narrow for the leather shoe, the sharp edge of the leather sole will soon cut through any rubber, especially if the ground is covered with rough ice or stones. The best interest of everybody concerned is served by the retailer refusing to sell rubber shoes that are not the right size and width."

INDIVIDUAL MENTION.

MR. GEORGE A. ALDEN, of the Boston rubber trade, with his family, is established at his attractive country-seat at Wellesley, Mass., for the season.

—Mr. A. N. Loring, of the Columbia Rubber Co., is said to be losing ground rather than gaining, his illness being of a mental character.

—It is said that the Hon. F. A. Magowan, of Trenton, recently made a small fortune through the sale of a large pottery in the West.

—Adolph Schlesinger, general superintendent of the Enterprise rubber works, at College Point, L. I., is also one of the village trustees and a director in the local savings bank.

—Mr. William J. Cable, Secretary of the Cable Rubber Co. (Boston), has moved from Jamaica Plain to his summer residence at Winthrop, Mass.

—Mr. E. G. Stearns, Chicago agent of the American Rubber Co., has been ill at the residence of E. H. Paine, Cambridge, Mass., but is now convalescent.

—The friends of Albert T. Holt will be grieved to know that death has entered his family. Mrs. Holt, who for a long time has been a sufferer from consumption, died during the latter part of May. Mr. Holt, it will be remembered, holds a position with the B. F. Goodrich Rubber Co., in Akron, Ohio.

—The writer called lately upon that veteran in the rubber business, Mr. A. R. Trotter, at his residence in Bristol, R. I. He has been unable to do active work for a considerable time, but everything occurring in the business in which he was a pioneer is of peculiar interest to him. In a prominent position on the center-table in his parlor lay a copy of the last issue of THE INDIA RUBBER WORLD.

—Charles Thomas De Forest, who died at his residence in New York, on May 26, was a son-in-law of the late Charles Goodyear. He was an assistant vestrymen of St. Thomas's church, and a member of the American Museum Society and West Side Republican Club. He was buried in New Haven.

—President Banigan, it is said, will not take up his residence in New York. He will visit Chicago in a few days, and then go to Scotland, where he has large landed interests, returning to Providence late in the summer.

—Mr. Ratcliffe Hicks, whose speech before the Connecticut House of Representatives in opposition to capital punishment was noticed in the last number of THE INDIA RUBBER WORLD, has delivered another speech before that body, which has also come to this office handsomely printed in pamphlet form. It is a speech in favor of the Woman's Suffrage Bill, giving women the right to vote at school elections.

—The many friends of Mr. Joseph T. King will be glad to know that he has recovered from his recent severe illness. Shortly after Mr. King's coming to New York he was taken sick with pneumonia, which confined him to his bed four weeks, then taking a month more to convalesce. Mr. King is again on duty the same as ever, in charge of the retail department of the Hodgman's Rubber Co.'s Broadway store.

RUBBER SALESMEN ON AND OFF THE ROAD.

NEARLY every one in any way connected with the rubber business in Trenton, N. J., knows Townsend N. Conrad, who for eleven years represented the well-remembered Star Rubber Co. of that city. Mr. Conrad was born in Virginia in 1840 and was educated at Dickinson College, one of the best known schools at that time. From 1856 to 1859 he was in the far West engaged in purchasing supplies for the Government under contract from Majors Waddell and Russell for the United States Army in the territories under the command of General Albert Sidney Johnston. At the outbreak of the Civil War Mr. Conrad donned the Confederate gray and joined Dixon's Battery, which was made up mostly of the young men of Page County, Va. This organization afterward formed a part of the famous Washington Battalion of artillery from New Orleans. After the war Mr. Conrad was on the road for several years selling groceries from both Philadelphia and

TOWNSEND N. CONRAD.

Baltimore. In 1874 had position in Chancery office of State of New Jersey under Senator Henry F. Little.

So far Mr. Conrad had not gotten into the rubber business, but in the fall of 1879 he accepted a position with the Star Rubber Co. of Trenton as managing salesman for the south and southwest, a territory where he sold many thousand rolls of belting during the existence of his company and where he was the best known Trenton traveler. It is hardly necessary to speak of his many friends in the larger cities of the South; suffice it to say, that in the large mechanical rubber goods markets of Baltimore, Atlanta, New Orleans, and Texas cities, Mr. Conrad was correctly thought to have the largest and very best class of trade and his customers he usually held from season to season. Mr. Conrad was popular with the jobbers and their salesmen, as he never tried to sell both the jobber and the jobber's customer. Later part of the North and Canada was added to his territory.

For a long time Mr. Conrad made his headquarters in Atlanta and also in Camden, N. J., where his family now reside. After the failure of the Star Rubber Co. he was a broker in mechanical rubber goods, selling on commission for several companies, among which was the Columbia Rubber Works Co. of New York City. He is now the manager of the Patapsco Rubber Co. of Baltimore.

SHORT TRIPS.

THE New York and Boston friends of John Montague, the popular head of the Norfolk (Va.) rubber- and oil-clothing firm of Montague & Bunting, were glad to see him on his annual trip north.

—C. J. Boyd is busy with visiting buyers in the New York office of Boyd, Jones & Co.

—The Duck Brand Co., of Chicago, are fitting out their travelers with an especially large line of mackintosh samples. This is a progressive and wide awake company that is in keeping with the World's Fair City, it having grown very fast.

—E. R. Burley, Chicago agent for the Boston Rubber Co., was east last week visiting the mills of his company in Chelsea and Franklin, Mass.

—H. N. Towner, of Towner & Co., Memphis, Tenn., is east taking a little rest and looking after fall purchases.

—W. E. Wysham, who has been away on a short vacation, is back in New York and is fixing up for an extended trip south with the handsome line of samples of the Hodgman Rubber Co.

—W. H. Daffron is enjoying his vacation in his former home, Richmond, Va.

—C. W. Dean is making an extended trip through Pennsylvania for the well-known Philadelphia house of Latta & Mulconroy.

—The Cleveland Rubber Co. have secured the services of Gilbert Congdon, who will handle clothing and druggists' sundries and travel west. Mr. Congdon was in New York recently and met many friends.

—The lot of the rubber-shoe traveler is very trying just now. Detailed orders are very hard to secure and some jobbers refuse to sign agreements.

—W. D. Lema, Ohio representative of Standard Rubber Corporation, is now on a southern trip, looking after large trade in all the principal cities through the central south and southeast, going as far as New Orleans. He expects to finish up the trip and reach the mills at Brockton, Mass., about July 4.

—A note from Boston states that Daniel Hunt, formerly selling agent of the New Jersey Rubber Co., now in his seventy-seventh year, is enjoying excellent health, and is a frequent visitor to the offices of the United States Rubber Co.

—The collapse of the house of J. W. Girvin & Co., in the San Francisco rubber trade, which has been fully reported in this journal, threw out of place a number of employés. One of these, J. A. Hackett, has established himself in business at No. 12 California street, where he will carry a full line of samples of rubber goods. He will for the present do a commission business only, filling orders for the products of some of the best manufacturing concerns.

REVIEW OF THE RUBBER MARKET.

THE crude rubber market during the past month could hardly have been otherwise than very dull. In the financial world there has been nothing but a series of failures, almost from pole to pole, and around the globe. In the United States an acute stage of disturbance has appeared. Gold has left the country in a steady outflow for weeks, and now in some portions of the country there is an epidemic of bank failures. Abroad remarkable failures have occurred in Australia, which have been reflected in London exchanges, radiating naturally to ourselves. They would be more perceptible if we could separate the effects of our own troubles from those which reach us in a general way from other countries. In Brazil exchange has fallen to 10½d., and that country is evidently suffering in the general demoralization.

Naturally in such a state of affairs crude rubber is not active. The manufacturer does not care to add to his stock for two reasons. Rubber represents so much money, generally carried by funds borrowed from a bank, and at this moment it is with difficulty carried. A manufacturer may have two dollars in property for every one that he owes, and still, in these times, if he does not calculate with a nicety as to his credit, he may be forced into bankruptcy at an unfortunate moment. Again, he is not sure that business will be good a little later on; in fact, he does not care if it is not, for with every credit given to the merchant in the interior comes a fear that bills of the latter cannot be met at maturity. The jobber is not now boasting of the numerous orders he is receiving; he is anxiously scanning every credit he is compelled to give.

In the different branches the falling off in the demand from the bicycle-men is the most prominent. This is a sort of extravagance that many people will avoid more quickly than in other articles; the change that has come over this business is reflected in a cut of 33 per cent. in prices of wheels made during the month by several leading manufacturers. Importers and brokers have noticed this falling off in demand from that class of manufacturers for several weeks and call it remarkable. All other branches in the trade are buying very slowly.

The deliveries in New York during May were 612 tons of Pará, and 147 tons of Caucho; in May of the previous year there were 676 tons Pará and 47 tons Caucho.

The world's visible supply of Pará rubber on May 31, 1893, compared with a date one month before, and one year before, was as follows, amounts being stated in tons:

	May 31, 1892.	May 31, 1893.	April 30, 1893.
United States	636	1050	1290
England	1061	752	635
*Pará	190	270	1025
*Afloat to U. S.	290	435	700†
*Afloat to Europe	150	330	
Total	2327	2837	3650

The statistical position of Pará rubber in New York is thus reported for May, 1893, as compared with the same month in preceding years:

Stock of Pará here,	April 30,		about	2,250,000 pounds.
Receipts	May		"	1,175,000 pounds.
Deliveries	May		"	1,325,000 pounds.
Stock	May	31, 1893,	"	2,100,000 pounds.
Stock	May	31, 1892,	"	1,400,000 pounds.
Stock	May	31, 1891,	"	3,350,000 pounds.

* Excluding Caucho.

† For both Europe and United States.

PRICES FOR MAY.

	1893.		1892.		1891.	
	Fine.	Coarse.	Fine.	Coarse.	Fine.	Coarse.
First	75	49	68	46	89	59
Highest	75	50	68	46	90	59
Lowest	74½	49	67	45½	87	57
Last	74½	49	68	46	87	57

The latest quotations in the New York market are:

Pará, fine, new	72@74	Sierra Leone	25@42
Pará, fine, old	76@79	Benguela	49@50
Pará, coarse, new	47@55	Congo Ball	36@42
Pará, coarse, old	———	Small Ball	33@36
Caucho (Peruvian) strip	49@50	Flake, Lump and Ord.	31@32
Caucho (Peruvian) ball	53@54	Mozambique, red ball	———
Mangabeira, sheet	36@42	Mozambique, white ball	———
Esmeralda, sausage	50@51	Madagascar, pinky	58@62
Guayaquil, strip	35@38	Madagascar, black	42@45
Nicaragua, scrap	48@50	Borneo	28@45
Nicaragua, sheet	46@47	Gutta-percha, fine grade	1.75
Guatemala, sheet	———	Gutta-percha, medium	1.15
Thimbles	39@40	Gutta-percha, hard white	1.10
Tongues	33@36	Gutta-percha, lower sorts	nominal.

In regard to the financial situation Messrs. Simpson & Beers, brokers in crude India-rubber and commercial paper, New York, advise us as follows:

"May was a counterpart of April, in so far as the placing of commercial paper is concerned, our banks still being disinclined to purchase outside. The enormous shrinkage in industrial and railroad stocks, some decline in investment securities, together with failures here and elsewhere, have all contributed to cast gloom over the financial horizon. What little business paper was sold during April was done mostly at from 7 to 10 per cent., first-class single and endorsed notes. There is a moderate amount of rubber paper on the market awaiting buyers."

NEW REQUIREMENTS FROM IMPORTERS.

THE following general letter addressed to importers in the rubber trade in New York, under date of May 31, 1893, reflects the stringency in the financial world.

"Under cable instructions from Messrs. Dennistoun, Cross & Co., London, we have to request you to settle with us for goods delivered you under 'Red Letter' receipt, in strict conformity with the terms of the receipt.

"We are also instructed not to deliver goods arriving, and for which they have accepted on your account, except on the condition that you will strictly conform to the terms of the 'Red Letter' receipt in the settlement.

"Messrs. Dennistoun, Cross & Co. further request that you will cancel all outstanding credits granted you by them.

"There is nothing personal in these instructions—they are sent us for all of Messrs. Dennistoun, Cross & Co.'s customers here.

"We have requested Messrs. Dennistoun, Cross & Co. to send an agent here to take charge of this business. We are, dear sirs, very respectfully.

"MOSLE BROTHERS."

In explanation of the foregoing, it may be stated that it is the custom when an importer purchases rubber abroad to obtain a credit with Dennistoun, Cross & Co., London, for whom Mosle Brothers are the New York correspondents. These credits are made out on forms printed in red,—hence the name "red letter" receipts. A strict conformity with the terms of the "red letter" receipt would imply that the consignment must come forward in the name of the bankers, that they must be stored in their name, and that when a sale is about to be made the bankers

must be notified and all papers relative to the transaction must also be in the name of the banking company, the owner himself acting as agent simply. Naturally at the conclusion of the whole affair everything is straightened out and the owner obtains his share of the money; but in the meantime the transaction has been very awkward and annoying to banker, importer, and manufacturer,—so much so that the strict terms of the contract heretofore have been honored. In view, however, of the existing distrust in financial circles, the terms of the receipts are now to be enforced, and as there is an intimation that credits will be curtailed, there will be an indisposition to import rubber in large quantities, and this may in turn affect prices. It takes a great deal of money to handle rubber, and the volume of trade will be very susceptible to this new influence.

THE TRADING IN RUBBER STOCKS.

THE quotations which follow represent the daily transactions in Rubber stocks on the New York Stock Exchange since the last report given in these pages:

DATES.	COMMON.			PREFERRED.		
	Shares.	High.	Low.	Shares.	High.	Low.
May 11	220	33⅛	33	....	....	....
May 12	1000	42	39⅝	200	81	81
May 13	750	41	40	....	....	....
May 15	800	40¾	39¾	330	82	80
May 16	300	41¾	40½	200	81½	81½
May 17	400	42⅛	42	....	....	....
May 18	100	42¼	42¼	100	82¾	82¾
May 19	400	46⅛	43	250	84	84
May 20	440	49	48½	250	84	84
May 22	....	....	....	....	....	....
May 23	...	....	....	110	84	84
May 24	150	44⅛	44½	50	85	85
May 25	440	47	44	....	....	....
May 26	140	44¼	44¼	....	....	....
May 27	150	44¼	44¼	50	87½	87½
May 29	100	44⅛	44⅛	120	82	82
May 31	....	....	....	62	85¼	84
June 1	....	....	....	....	....	....
June 2	....	....	....	....	....	....
June 3	100	45	44½	....	....	....
June 5	126	43	43	31	83	82
June 6	....	....	....	....	....	....
June 7	....	....	....	....	....	....
June 8	....	...	....	....	....	....
June 9	...	....	....	....	....	....
June 10	100	42	42	155	81⅛	81½
November	31,208	44¾	38¾	....	....	....
December	15,943	48¼	39	2,607	94½	99
January	9,604	47¼	42½	5,521	94	99
February	7,024	46⅛	43	1,333	92½	97
March	30,438	58½	42	2,938	93	99
April	25,625	60⅝	53⅞	3,251	94¾	99½
May	24,999	57¾	33	4,835	91	80

The financial writer of the Boston *Advertiser* says in the issue of that journal for June 7:

"People who are thoroughly posted in the affairs of the United States Rubber Co. assure me that the preferred stock is all right, and even on a market like this, is a better purchase than sale. The preferred stock of this company represents actual cash value, of plants, put into the trust at an extremely low valuation. In fact there is not a drop of water in the preferred. The water, at the time of the formation of the trust was all put into the common stock, which by the way is even now earning a handsome dividend. One of the shrewdest of Boston's bankers, a gentleman who went into the enterprise at the start after having made a most careful and thorough investigation of it, and who subscribed heavily to the preferred at 102½ tells me that he has not parted with a share of his stock, and that if anything he believes more thoroughly in it now than when he made his subscription. He considers it fully as good as Sugar preferred, and points out the fact that in the recent liquidation Rubber preferred has not begun to suffer the decline which Sugar preferred has undergone.

AFRICAN RUBBER—LIVERPOOL.

TO THE EDITOR OF THE INDIA RUBBER WORLD: We have very little change to report in the prices of African rubber for the month of May. The demand, especially for good descriptions, has been well maintained throughout the month. We estimate the sales at 210 tons. At the close there is a specially good demand for the best quality Accra Oysters. The sales include the following:—

	English price.	Approximate prices laid down in New York.
Soft Liberian	1/2¾@1/3	29½@30 c.
Hard Liberian	1/4 @1/4¼	32 @32½c.
Accra, Saltpond, and Cape Coast Biscuits of fair quality	1/9½@1/9¾	43 @43½c.
Accra Biscuits, best quality	1/10 @1/10¼	44 @44½c.
Addah Niggers	1/9 @1/9½	42 @43½c.
Prime Selected Sierra Leone Niggers	1/6¾@	37½c.
Grand Bassam and Assinee	1/5 @1/7	34 @38 c.
Prime Gambia Niggers	2/1 @2/2	50 @52 c.
Mixed Cameroon	1/6½@	37 c.
Large Cameroon or Batanga Ball	1/5½	35 c.
Best Kongo Ball	1/8¼@1/9	41½@42 c.
Gaboon Ball (or second Kongo Ball)	1/7½@1/8	39 @40 c.
Thimbles	1/7½@1/8	39 @40 c.
Flake	1/2	28 c.
Lump Flake	1/2½	29 c.
Benguela Niggers c. i. f. New York	1/11	46⅛c.
Prime black Manoh Twists	2/4½	57 c.
Old Calabar	1/5¼	34½c.

The stock of Africans is officially estimated at 525 tons, against 624 tons last month.

In London, medium kinds continue to command full prices, and sales of Colombian Sheet have been made at 2/8@2/½ (equal to 64 to 65c); Madagascar Niggers at 9d@1/4 (18 to 32 c.) according to quality; pinky Madagascar at 2/5½@2/6 (59 to 60c), and other kinds at proportionate prices. We append a statement of Liverpool Rubber Statistics for the month.

WM. SYMINGTON & CO.

Liverpool, May 31, 1893.

LIVERPOOL RUBBER STATISTICS.

	TONS.
Stock of Pará rubber April 29, 1893	635
Arrivals of Pará during May	
[*per Dalton, Maranense, Lanfranc, British Queen, and Nasmyth.*]	636
	1271
Stock of Pará on May 31, 1893	752
Deliveries of Pará during May	519
As against deliveries during April, 1893	424
Stock of African rubber April 29, 1893	624
Arrivals of Africans during May	277
	901
Stock of Africans on May 31, 1893	525
Deliveries of Africans during May	376
As against deliveries during April	303

The stock of Pará rubber on May 31 consists of:—

	Fine.	Entrefine.	Negroheads.	Total.
First hands	353	74	151	578
Second hands	121	40	13	174
Total	474	114	164	752

The stock of Ceará rubber on May 31, 1893, was 686 bales and 2 tons; stock of Peruvian rubber, 33 tons.

IMPORTS FROM PARA.

THE imports in detail of rubber direct from Pará at the port of New York, since our last report, have been as follows, all quantities being expressed in pounds:

May 22.—By the steamer *Basil* from Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Totals.
Reimers & Meyer	25,600	4,500	10,900	....	41,000
Boston Rubber Shoe Co.	21,200	4,400	7,500	2,200	35,300
Joseph Banigan	21,200	4,000	7,700	....	32,900
G. Amsinck & Co.	17,500	....	3,300	9,600	30,400
New York Commercial Co.	17,400	1,400	9,300	300	28,400
Lawrence Johnson & Co.	5,200	700	1,500	....	7,400
Shipton Green	1,100	600	2,400	....	4,100
Hagemeyer & Brunn	2,300	....	900	....	3,200
Total	111,500	15,600	43,500	12,100	182,700

May 25.—By the steamer *Origen* from Pará:

New York Commercial Co.	73,500	11,900	36,700	800	122,900
Boston Rubber Shoe Co.	57,500	15,300	13,900	....	86,700
Shipton Green	48,200	3,400	17,200	6,200	75,000
Reimers & Meyer	....	9,300	34,800	6,500	50,600
W. R. Grace & Co.	8,600	1,400	7,200	....	17,200
Sears & Co	1,200	....	900	8,100	10,200
Total	189 000	41,300	110,700	21,600	362,600

May Imports of Pará rubber	1,367,600
April Imports	3,881,400
March Imports	2,107,600
February Imports	2,924,300
January Imports	3,349,000
December Imports	4,809,600

IMPORTS OF CENTRALS.

BELOW will be found in detail the imports at New York, during April, 1893, of India-rubber from Mexico, Central America, and South America, other than Pará grades:

MAY 1.—By the *Andes*=Cartagena:	POUNDS.
Pim, Forwood & Co.	1,800
W. R. Grace & Co.	9,800
Total	11,600
MAY 1.—By the *Lessel*=Bahia:	
Reimers & Meyer	9,200
MAY 4.—By the *Miranda*=Central America:	
Eggers & Heinlein (Cape Gracias)	37,800
Otto G. Meyer & Co. (Cape Gracias)	8,400
Leaycraft & Co. (Belize)	800
A. P. Strout (Greytown)	14,200
Andreas & Co. (Greytown)	1,800
G. Amsinck & Co. (Greytown)	2,000
Total	65,000
MAY 4.—By the *Orizaba*=Vera Cruz:	
H. Marquardt & Co.	250
Thebaud Brothers	800
Total	1,050
MAY 6.—By the *San Marcos*=Colon:	
J. M. Ceballos & Co	9,300
Herzel, Feltman & Co	1,800
G. Amsinck & Co.	17,800
Joseph Agostini	1,050
Bock & Co.	21,400
To Order	16,750
Total	48,100
MAY 6.—By the *Athos*=Port Limon:	
Ellinger Brothers	2,400
MAY 10.—By the *Saratoga*=Vera Cruz:	
J. Agostini	400
H. Marquardt & Co.	150
Thebaud Brothers	150
J. E. Ward & Co. (for Boston)	100
Total	800
MAY 10.—By the *Roman Prince*=Cartagena:	
J. Ferro	2,450
To Order	800
Total	3,250
MAY 13.—By the *Colombia*=Colon:	
Eggers & Heinlein	300
[Ex *Acapulco*=Central America.]	
H. Marquardt & Co.	2,865
Munoz & Esprella	112
[Ex *Colon*=Central America.]	
W. Loalza & Co	78
Hoadley & Co	561
Pomares & Cushman	113
Piza, Nephews & Co	219
[Ex *Quito*=South Pacific.]	
F. G. Tomas	94
G. Amsinck & Co.	4,125
Andreas & Co.	1,978
Flint & Co.	2,467
W. R. Grace & Co.	3,895
C. Roldan & Van Sickel	2,306
Munoz & Esprella	2,100
R. M. Capen's Sons	334
Samper & Co.	215
To Order	1,000
[Ex *Casma*=South Pacific.]	
J. M. Ceballos & Co.	393
G. Amsinck & Co.	2,415
W. R. Grace & Co.	2,530
Munoz & Esprella	3,898
A. M. Capen's Sons	700
C. Roldan & Van Sickel	3,000
Total	35,498
MAY 15.—By the *Ciudad Condal*=Vera Cruz:	
Graham, Hinckley & Co.	100
H. Marquardt & Co	150
Total	250
MAY 15.—By the *Alva*=Colombian ports:	
W. R. Grace & Co. (Cartagena)	7,800
Schulta & Ruckgaber (Cartagena)	300
J. Ferro (Cartagena)	1,500
Hoadley & Co (Cartagena)	150
Munoz & Esprella (Port Limon)	150
[In Transit to London.]	
Pim, Forwood & Co. (Savanilla)	600
Total	10,200
MAY 16.—By the *Arecuna*=Trinidad:	
Oelrichs & Co.	900
MAY 17.—By the *Tyree*=Port Natal:	
Herbst Brothers	1,100
MAY 17.—By the *Seneca*=Mexican ports:	
L. Montjo, Jr. & Co. (Tuxpan)	150
H. Marquardt & Co. (Vera Cruz)	150
Total	300
MAY 18.—By the *Alamo*=Colon:	
Bock & Co. (Panama)	2,400
G. Amsinck & Co. (Panama)	7,300
Kessler & Co. (Guayaquil)	9,800
To Order	10,200
Total	29,700
MAY 20.—By the *Sirius*=Bahia:	
To Order	3,300
MAY 21.—By the *Argonaut*=Central America:	
Eggers & Heinlein (Belize)	600
A. S. Lascelles & Co. (Port Cortez)	200
A. P. Strout (Porto Cortez)	2,200
Total	3,250
MAY 23.—By the *City of Pará*=Colon:	
Eggers & Heinlein	150
H. W. Peabody & Co.	180
A. N. Rotholz	250
[Ex *Barracouta*=Central America.]	
S. Samper & Co.	1,752
Munoz & Esprella	289
J. Aparicio & Co	1,709
[Ex *San Jose*=Mexico and Central America.]	
W. H. Crossman & Co.	470
J. Aparicio & Co.	200
[Ex *City of NewYork*=Mexico and Central America.]	
Munoz & Esprella	358
Total	5,358
MAY. 24.—By the *City of Alexandria*=Mexico:	
J. W. Wilson & Co (Tuxpan)	450
H Marquardt & Co. (Tuxpan)	300
H. A. Forrest & Co (Tuxpan)	200
Seiger & Guernsey Co. (Laguna)	1,050
Total	1 900
MAY 27.—By the *Alba*=Cartagena:	
H. S. Forwood (for London)	4,800
MAY 30.—By the *Newport*=Colon:	
[Ex *City of Panama*=Mexico.]	
W. Loalza & Co	202
A. P. Strout (Central America)	1,663
F. A. J. Meyer	191
[Ex *Starbuck*=Central America.]	
Munoz & Esprella	142
Flint & Co.	452
[Ex *Casma*=South Pacific.]	
F. L. De Lung & Co	135
W. R. Grace & Co.	1,790
[Ex *Avon*=Greytown.]	
W. H. Crossman & Co.	13,100
Total	17,675
MAY 31.—By the *Yumurri*=Vera Cruz:	
G. Amsinck & Co.	500
F. Probst & Co.	150
Waitland, Phelps & Co.	300
Graham, Hinckley & Co.	300
H. Marquardt & Co.	150
Total	1,400
MAY 31.—By the *Minnie Bergen*=Frontera:	
Thebaud Brothers	450

Total Imports for May	257,481
Total for April	200,383
Total for March	277,459
Total for February	244,526
Total for January	222,308
Total for December	208,196
Total for November	297,100
Total for October	207,715
Total for September	140,756

BOSTON ARRIVALS.

MAY 2.—By the *Colonia*=Hamburg:	POUNDS.
Reimers & Meyer, Africans	21,000
MAY 9.—By the *Sagamore*=Liverpool:	
Reimers & Meyer, Africans	9,000
MAY 12.—By the *Venetian*=London:	
Reimers & Meyer, East India	24,000
George A. Alden & Co., Africans	5,964
MAY 15.—By the *Scythia*=Liverpool:	
Woonsocket Rubber Co., Africans	10,000
MAY 17.—By the *Lancastrian*=Liverpool:	
Boston Rubber Shoe Co., Africans	19,000
MAY 18.—By the *Angloman*=Liverpool:	
Reimers & Meyer, Africans	28,000
MAY 20.—By the *Borderer*=London:	
Reimers & Meyer, East India	23,000
MAY 25.—By the *Kansas*=Liverpool:	
Reimers & Meyer, East India	25,000
Reimers & Meyer, Africans	2,000
George A. Alden & Co., Africans	4,500
MAY 31.—By the *Cambronian*=Liverpool:	
Reimers & Meyer, Africans	1,200
Total Imports for May	172,664

Total for April	185,500
Total for March	221,400
Total for February	525,513
Total for January	309,640
Total for December	258,120
Total for November	297,100
Total for October	100,650

NEW ORLEANS.

APRIL.

	POUNDS.	VALUE.
From Honduras	180	$ 58
From Nicaragua	72,428	31,952
From British Honduras	106	33
Total	72,714	$32,043

RUBBER IMPORTS AND EXPORTS.

THE imports of crude India-rubber and Gutta-percha to the United States are officially stated by the Treasury Department as follows, in the latest publication from that source:

QUANTITIES (POUNDS).

	Month ending March 31.		Nine months ending March 31.	
	1893.	1892.	1893.	1892.
India-rubber	3,545,739	4,551,073	30,815,850	30,619,009
Gutta-percha	60,696	14,150	453,838	178,021
Total	3,606,435	4,665,223	31,269,688	30,797,030

VALUES.

	Month ending March 31.		Nine months ending March 31.	
	1893.	1892.	1893.	1892.
India-rubber	$2,488,846	$2,206,435	$21,277,582	$13,360,211
Gutta-percha	13,723	7,158	126,976	62,582
Total	$2,502,569	$2,213,594	$21,404,561	$13,422,801

A comparative statement of the value of imports of crude India-rubber and Gutta-percha for several years past is given thus:

Nine months ending March 31, 1888	$11,966,734
Nine months ending March 31, 1889	9,503,515
Nine months ending March 31, 1890	10,039,015
Nine months ending March 31, 1891	13,991,281
Nine months ending March 31, 1892	13,422,801
Nine months ending March 31, 1893	21,404,561
Average from 1888 to 1892	$11,784,668
Excess of last nine months over average for preceding years	9,619,893

The statistics of importations are exhausted with the following statement of the receipts of manufacturers of India-rubber and Gutta-percha; showing values:

	Month ending March 31.		Nine months ending March 31.	
	1893.	1892.	1893.	1892.
India-rubber	$33,567	$39,526	$251,139	$297,811
Gutta-percha	5,791	5,126	57,288	53,109
Total	$39,358	$44,652	$308,427	$350,920

Exports of manufactures of India-rubber and Gutta-percha are given under a single heading, values being stated as follows:

	Month ending March 31.		Nine months ending March 31.	
	1893.	1892.	1893.	1892.
Boots and Shoes	$ 17,056	$ 11,055	$ 187,511	$156,732
All other	153,883	102,715	1,044,987	908,903
Total	$170,939	$113,770	$1,232,498	$1,065,635

The number of pairs of rubber boots and shoes increased from 201,431, in the nine months ending March 31, 1892, to 301,961 pairs in the last nine months.

The gradual growth of our manufactures of India-rubber and Gutta-percha is shown in the following statement of values:

Nine months ending March 31, 1888	$ 657,798
Nine months ending March 31, 1889	639,349
Nine months ending March 31, 1890	785,039
Nine months ending March 31, 1891	939,330
Nine months ending March 31, 1892	1,065,635
Nine months ending March 31, 1893	1,232,498

The exports of crude India-rubber, by quantities and values, are thus stated:

	Month ending March 31.		Nine months ending March 31.	
	1893.	1892.	1893.	1892.
Pounds	28,548	69,234	423,769	1,201,239
Values	$15,169	$34,398	$234,247	$643,766

During the last nine months there were no exports of crude Gutta-percha. During the corresponding period ending March 31, 1892, there were exported 8557 pounds, valued at $5170.

No foreign manufactures of India-rubber or Gutta-percha have been exported during the past nine months.

RUBBER GOODS WANTED FOR CONGRESS.

THE Hon. James Kerr, clerk of the House of Representatives at Washington, is inviting proposals for the annual supplies of stationery required by that body during the fiscal year ending June 30, 1894. These bids are to be opened at 12 o'clock noon, on June 21, and the usual stipulations that accompany Government contracts will be observed. Among the articles required are the following items of rubber goods:

800 gross rubber bands (600 gross assorted), as per following list: 1 dozen each, Nos. 11, 14, 15, 17, 26, 30, 31, 32, 50, 000 1-4, 00 1-4, and one-half dozen each of No. 000 3-8, 00 3-8, 12 dozen in each box.

300 gross small rubber bands.

12 dozen ink and pencil erasers, small.

12 dozen ink and pencil erasers, mammoth.

12 dozen ink and pencil erasers, assorted.

12 dozen rubbers for typewriter carriage.

3 dozen fac simile rubber hand stamps, with inking pads. To be furnished promptly as, and when ordered.

6 dozen rubber stamp pads, ink.

4 dozen rubber stamping, ink.

Bidders will be required to furnish samples of each class of articles marked with the name of the bidder, the name of the manufacturer, and the price. Samples marked with the letter or number referring to a schedule or price list will not be considered. Contracts will be awarded only to established manufacturers of or dealers in the articles enumerated, and preference will be given to productions of American industry, if equally cheap, and as of good quality. When a bidder does not present samples, the Government reserves the right to divide the quantities called for among other bidders whose goods are more suitable.